

# Service Manual

\*\* dbx/Closed Loop Dual Capstan  
DOUBLE DOLBY SYSTEM

Cassette Deck  
**RS-B905**

\*  **DOLBY B-C NR HX PRO**

Color

(K)...Black Type



| Color | Areas                                                               |
|-------|---------------------------------------------------------------------|
| (K)   | [M].....U.S.A.                                                      |
| (K)   | [MC].....Canada.                                                    |
| (K)   | [E].....All European areas except United Kingdom.                   |
| (K)   | [EK].....United Kingdom.                                            |
| (K)   | [EG].....F.R. Germany.                                              |
| (K)   | [EH].....Holland.                                                   |
| (K)   | [XA].....Asia, Latin America, Middle Near East, Africa and Oceania. |
| (K)   | [XL].....Australia.                                                 |
| (K)   | [XB].....Saudi Arabia.                                              |

## SPECIFICATIONS

|                                            |                                                                  |
|--------------------------------------------|------------------------------------------------------------------|
| Deck system                                | Stereo cassette deck                                             |
| Track system                               | 4-track, 2-channel                                               |
| Heads                                      |                                                                  |
| REC/PLAY                                   | Combination head                                                 |
| Erasing                                    | Double-gap ferrite head                                          |
| Motors                                     |                                                                  |
| Capstan                                    | Electronically controlled DC motor                               |
| Reel table drive                           | Electronically controlled DC motor                               |
| Recording system                           | AC bias                                                          |
| Bias frequency                             | 85 kHz                                                           |
| Erasing system                             | AC erase                                                         |
| Tape speed                                 | 4.8 cm/sec. (1-7/8 ips)                                          |
| Frequency response                         |                                                                  |
| METAL                                      | 20 Hz~22 kHz (±15 dB)<br>30 Hz~21 kHz (DIN)                      |
| CrO <sub>2</sub>                           | 20 Hz~21 kHz (±15 dB)<br>30 Hz~20 kHz (DIN)                      |
| NORMAL                                     | 20 Hz~20 kHz (±15 dB)<br>30 Hz~19 kHz (DIN)                      |
| Dynamic Range (with dbx on)                | 110 dB (1 kHz)                                                   |
| Max. Input level improvement (with dbx on) | 10 dB                                                            |
| S/N                                        | (signal level = max recording level, CrO <sub>2</sub> type tape) |
| dbx on                                     | 92 dB (A weighted)                                               |
| Dolby C NR on                              | 75 dB (CCIR)                                                     |
| Dolby B NR on                              | 67 dB (CCIR)                                                     |
| NR off                                     | 57 dB (A weighted)                                               |

Wow and flutter 0.04% (WRMS)  
±0.12% (DIN)

Fast Forward and Rewind Time  
Approx. 95 seconds with C-60 cassette tape

Input sensitivity and impedance  
LINE 60 mV/47 kΩ

Output voltage and impedance  
LINE 400 mV/2.2 kΩ  
HEADPHONES 125 mV/8 Ω

### ■ GENERAL

Power consumption 25W  
Power supply

For U.S.A. and Canada AC 60Hz, 120V

For continental Europe AC 50Hz/60Hz, 220V

For United Kingdom and other area  
AC 50Hz/60Hz, 110V/12V/220V/240V

Dimensions (W × H × D) 430 × 25 × 109.5mm  
(16-15/16" × 11-7/32" × 4-5/16")  
Weight 5 kg (11 lb.)

### Weight

\* HX Pro headroom extension originated by Barj Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

\*\* The term dbx is a registered trademark of dbx Inc.

• Specifications are subject to change without notice.  
Weight and dimensions are approximate.

Matsushita Services Company  
50 Meadowland Parkway,  
Secaucus, New Jersey 07094

Panasonic Hawaii, Inc.  
91-238, Kauhū St. Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka Japan

Panasonic Sales Company,  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
Ave. 65 De Infanteria, KM 9.7  
Victoria Industrial Park  
Carolina, Puerto Rico 00630

Matsushita Electric  
of Canada Limited  
5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3

# Technics

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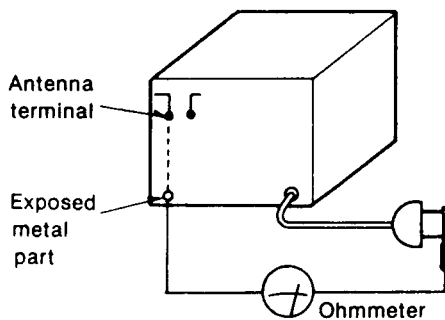
## SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### INSULATION RESISTANCE TEST

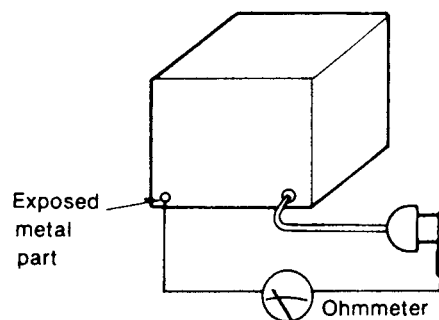
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3M\Omega$  and  $5.2M\Omega$  to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance =  $3M\Omega$ — $5.2M\Omega$



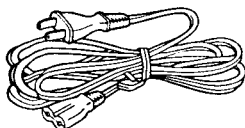
(Fig. B)

Resistance = Approx  $\infty$

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

## ACCESSORIES

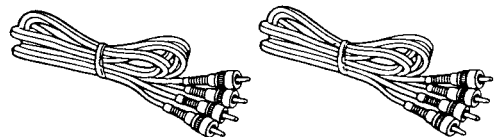
### • AC power supply cord...1



(SJA166—[M]  
SFDAC05E03—[E, EG, EH]  
SFDAC05G02—[EK]  
SJA173—[XL]  
SJA168—[XA]  
SJA183—[XB])

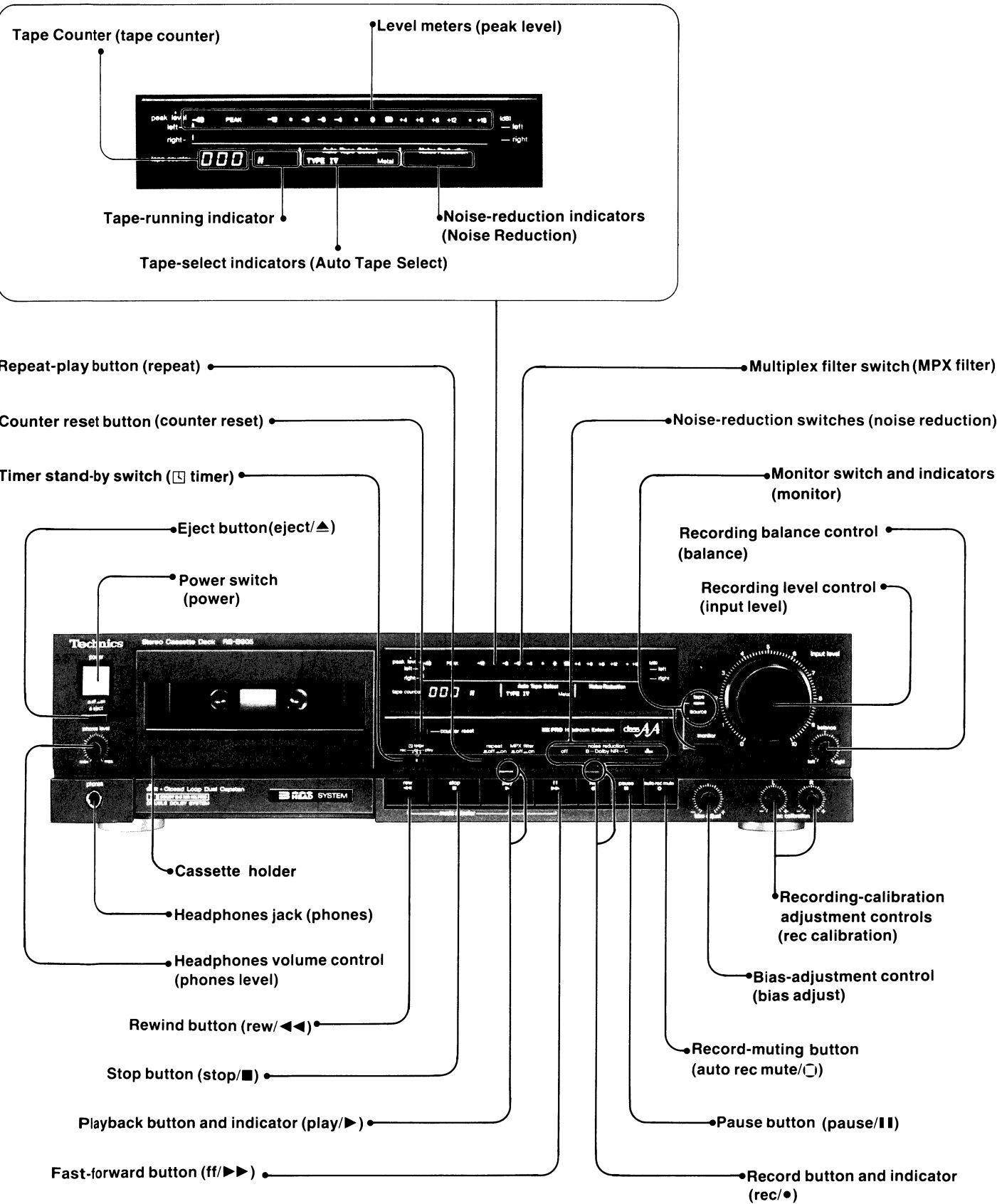
### • AC plug adaptor...1 (SJP9215-[XA, XB])

### • Stereo connection...2 (SJP2264)

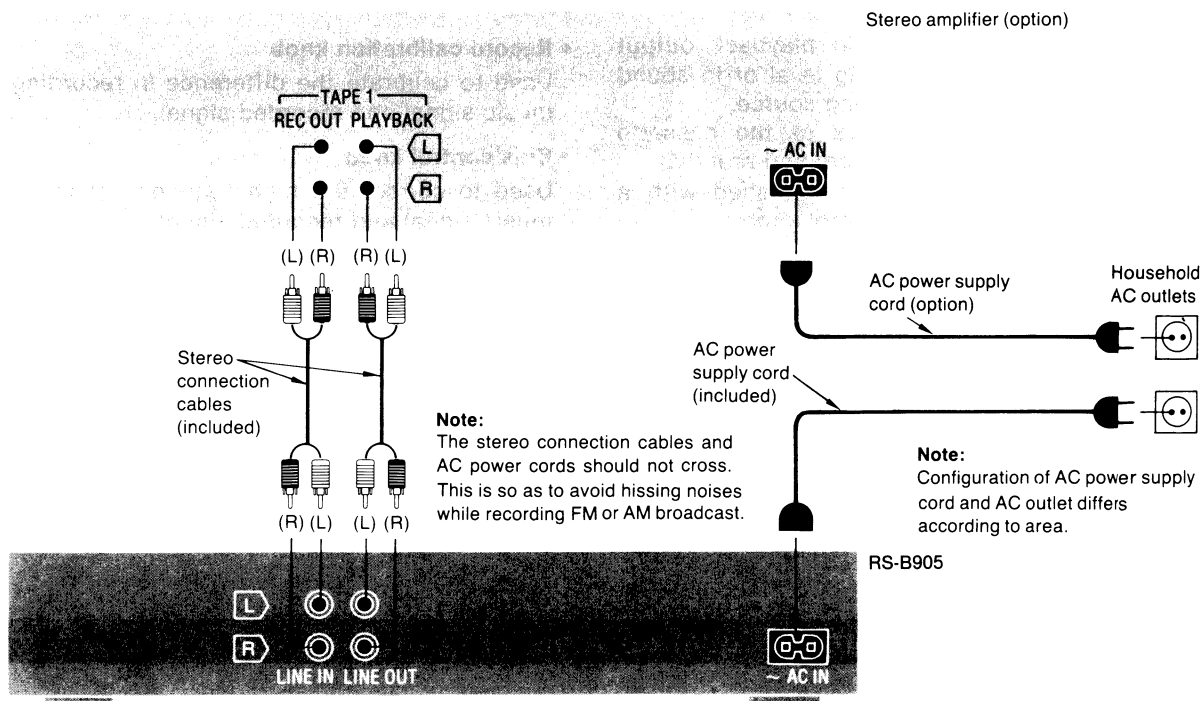


■ LOCATION OF CONTROLS

Front Panel



Rear Panel



■ TECHNICAL GUIDES

Dolby HX Pro-Head Room Extension System

To record good quality sound, it is necessary to give bias current to the head. The bias current has characteristics as follows:

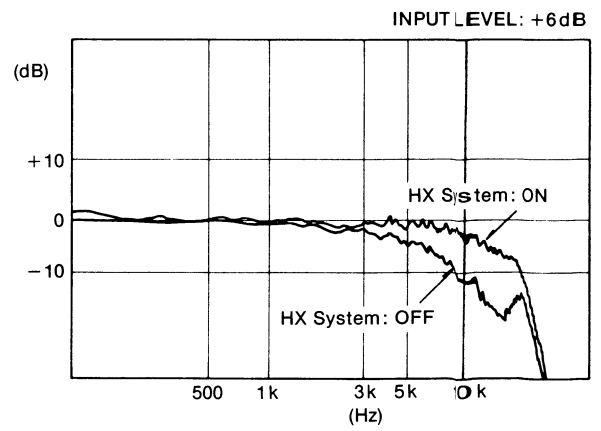
- Increasing the bias current reduces the distortion in low-frequency range but lowers the recording level in high-frequency range.
- Decreasing the bias current improves the recording level in high-frequency range but increases the distortion in low-frequency range.

In the case of a common deck, a specific level of bias current is determined according to the characteristics of recording head. Therefore, bias current cannot be applied to the head according to the frequency levels of music signal.

In order to solve such problems, this unit employs "Dolby HX-Pro". It picks up the high frequency of music source changing at all times, and controls the bias current level according to the changing frequency. It serves to make the bias current level then most suited for the music source.

This system always operates in recording mode irrespective of the noise reduction system, but the dynamic range in record/playback can be further increased by using this system in combination with a noise reduction system. Particularly, combination with the dbx NR system mounted in this unit will double the MOL (Maximum Output Level) in high frequency range, which is suited for the record/play-back of digital source as in CD.

Dolby HX Pro System (NORMAL)



## Record Calibration/Bias Control Function

There are sometimes differences in playback output level even in case of same recording level or in sound quality even in case of same recording source.

This is because the characteristics of the cassette tape used are different with the makers and brands.

To solve this problem, this unit is furnished with a record calibration knob and bias control knob.

These knobs can be used to adjust the sound volume and quality while comparing the music signal (original sounds of record and tuner) and recorded signal (sound recorded on tape).

The comparison by hearing can be done by only one monitor switch because this unit is of 3-head type with record, playback and erase heads.

### • Record calibration knob

Used to calibrate the difference in recording level of music signal and recorded signal.

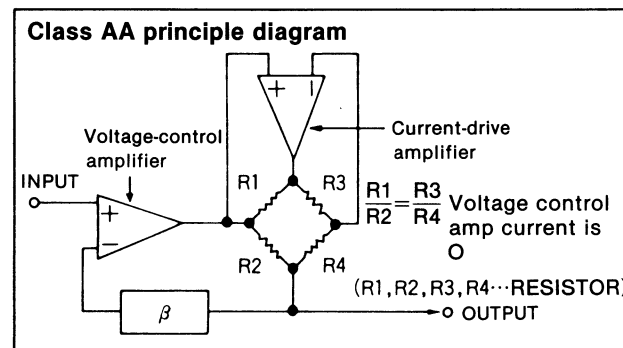
### • Bias control knob

Used to correct the high-frequency sound quality of music signal and recorded signal.

In this way, the record characteristics will not be distorted by tape, and the characteristics can be kept nearly uniform.

## <class AA> Circuit Recording Equalizer Amp

Recording equalizer amp is an amplifier to supply recording current to the head. Usually, loads such as recording head and bias trap circuit (bias current control circuit) are added to the amplifier. Therefore, the current phase and voltage phase are fluctuated causing the recording signal to be distorted. This unit employs "class AA" amp in which two types of amplifier circuits (voltage control amp and current supply amp) different in amplifying system. This recording equalizer amplifier is not influenced by the fluctuation of current phase or voltage phase as mentioned above, and is excellent in waveform response.



## Operation Principles of Noise Reduction System

### ● Dolby NR B type, C type

The level of hiss noise generated during playback is constant.

So, it is more offensive to the ear when the music signal level is lower.

Accordingly, raising the signal level during recording and lowering the level during playback will result in reduction of noise generated by the tape.

Dolby NR B type does it in high frequency range, and C type, in high and medium frequency ranges.

### ● dbx NR

Cassette tape is low in saturation level (limit of recording level). Therefore, distortion will be generated if music signal with large dynamic range (ratio of sound volumes of the weakest sound and the strongest sound) is recorded as it is.

dbx NR halves the music signal during recording and doubles it during playback.

In this way, dynamic range as large as 110dB and noise reduction effect as high as 30dB can be obtained, and good quality sound can be recorded even in case of music source with dynamic range as in CD and live performance.

## MPX Filter

If FM stereo broadcast is recorded by dolby NR, then the pilot signal included in the broadcast is also processed by dolby NR as music signal, causing deterioration of sound quality and worsening of noise reduction effect.

To solve this problem, this unit is furnished with MPX filter switch to cut off the pilot signal.

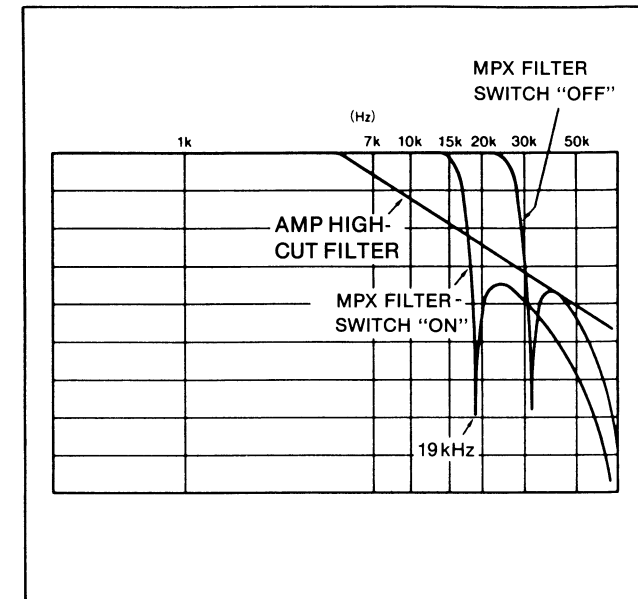
It serves to cut off the 19kHz single frequency of the pilot signal, which is different from a high cut filter installed in an amplifier, etc.

Also, MPX filter hardly causes change of sound quality in a sense of hearing.

(When recording a source other than FM broadcast, set this switch to off (■ → ■) position.)

### Pilot signal

This signal is used to separate FM broadcast into L (left) and R (right) channels, which is emitted at 19kHz very close to the music frequency band.

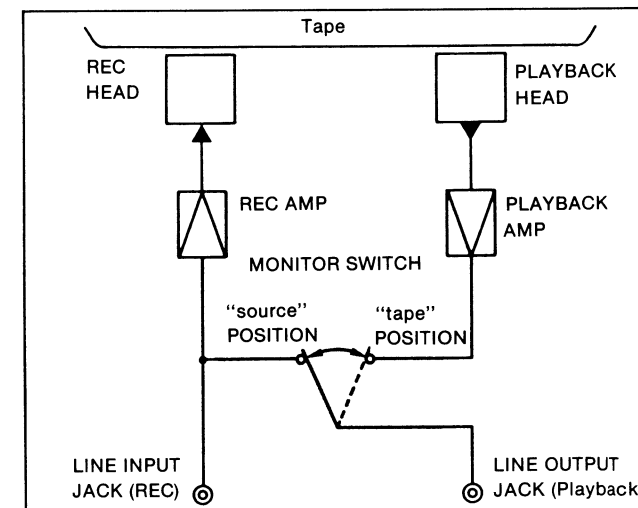


## Monitor Switch

In order to avoid faulty recording such as low sound level or distortion, it is very important to monitor the state of recording.

In the case of a common deck (2-head type), the sound that can be monitored during recording is always the sound before recording. So, when checking the state of actual recording, you have to rewind the tape and play it back.

This unit is of 3-head type, and the record head is independent of the playback head. Also, the sound before recording can be compared with the recorded sound by use of the monitor switch, therefore the state of recording can be easily checked.

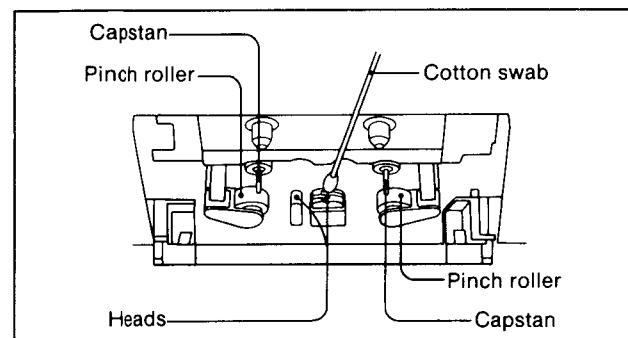


## Head care

To assure sound quality for recording and playback, be sure to clean the heads after approximately every 10 hours of use.

- 1) Press the power switch to switch off the electrical power supply of the cassette tape deck.
- 2) Press the eject button to open the cassette holder.
- 3) Clean the heads, pinch roller and the capstan shaft with a cotton swab (or with a soft, lint-free cloth) slightly moistened with alcohol.

Do not use any solution other than alcohol for head cleaning.



## Head demagnetization

In order to maintain good sound quality during recording and playback, it is recommended that the head assembly be demagnetized when distortion or poor sound quality persist after cleaning the heads.

If the head assembly becomes magnetized, it could create noise in the recordings, loss of high-frequency response or erasure of valuable recordings. Several types of head demagnetizers are available and may be purchased separately at local electronics supply stores. Follow the instructions that are supplied with the device.

- Do not bring any type of metal objects or tools such as magnetic screwdrivers in contact with the head assembly.

## Maintenance of external surfaces

To clean this unit, use a soft, dry cloth. If the surfaces are extremely dirty, use a soft cloth, dipped into a soap-and-water solution or a weak detergent solution. Wring the cloth well before wiping the unit. Wipe once again with a soft, dry cloth. Never use alcohol, paint thinner, benzene, nor a chemically treated cloth to clean this unit. Such chemicals may damage the finish of your unit.

## DISASSEMBLY INSTRUCTIONS

### "ATTENTION SERVICER"

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

| Ref. No.<br>1    | How to remove the cabinet                                                                                                                              | Ref. No.<br>3    | How to remove the FL meter P.C.B.                                                                                                                                                       |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Procedure<br>1   | • Remove the 5 screws.                                                                                                                                 | Procedure<br>1→3 | • Remove the 4 screws (1~4), and then remove the angle.<br>• Pull out the input level control knob and the balance control knob.<br>• Remove the 2 screws (5, 6).<br>• Push the 2 tabs. |
| Ref. No.<br>2    | How to remove the power P.C.B. and the main P.C.B.                                                                                                     |                  |                                                                                                                                                                                         |
| Procedure<br>1→2 | • Remove the connection rod.<br>• Remove the 5 screws (6~10).<br>• Remove the power P.C.B.<br>• Remove the 5 screws (1~5).<br>• Remove the main P.C.B. |                  |                                                                                                                                                                                         |

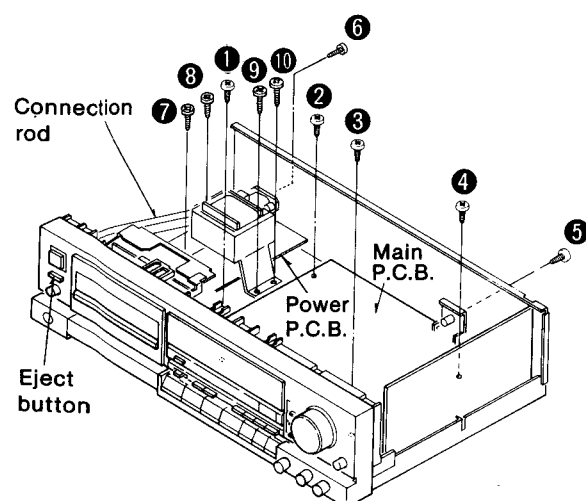


Fig. 1

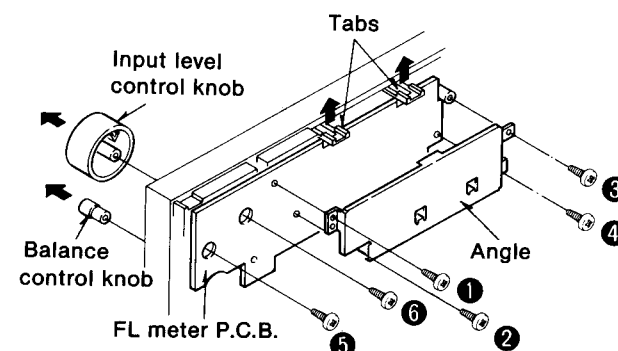


Fig. 2

| Ref. No.<br>4        | How to remove the timer P.C.B. and the bias adjust/recording calibration control P.C.B.                                                                                                | Ref. No.<br>7    | How to remove the operation switch P.C.B. |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------|
| Procedure<br>1→2→3→4 | • Remove the screw (3) and then the timer P.C.B.<br>• Remove the 2 screws (1, 2).<br>• Pull out the bias adjust knob.<br>• Remove the bias adjust/recording calibration control P.C.B. | Procedure<br>1→7 | • Remove the 5 screws (1~5)               |

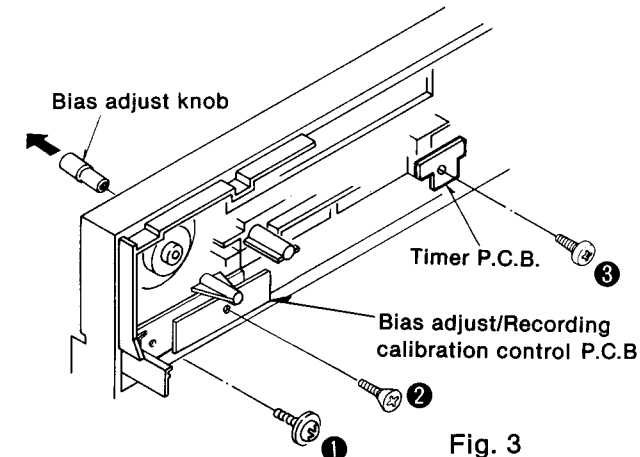


Fig. 3

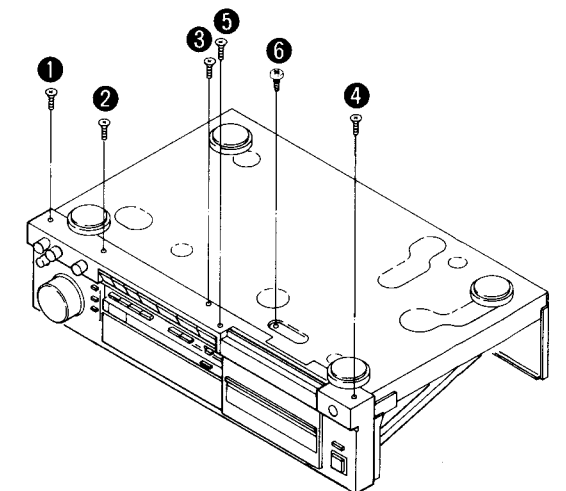


Fig. 5

| Ref. No.<br>5    | How to remove the mechanism unit                                                                     |
|------------------|------------------------------------------------------------------------------------------------------|
| Procedure<br>1→5 | • Remove the screw (6) (See the Fig. 5).<br>• Remove the 5 screws (1~5).<br>• Push the eject button. |

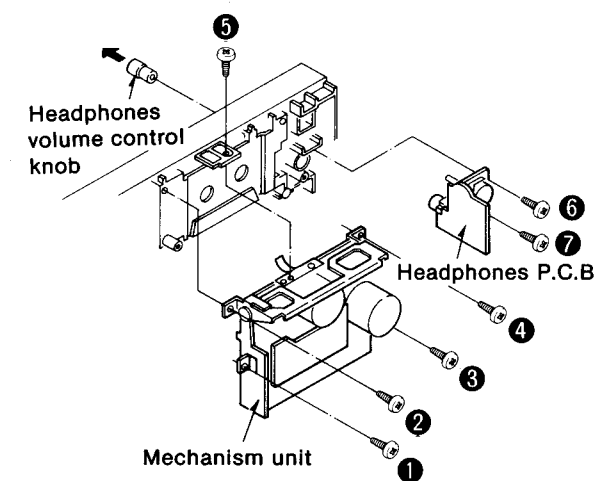


Fig. 4

- Remove the screw (7).
- Pull out the input level control knob and the balance control knob. (See the Fig. 2).
- Push the 3 tabs (8) and then remove the front panel.
- Push the 2 tabs (9).

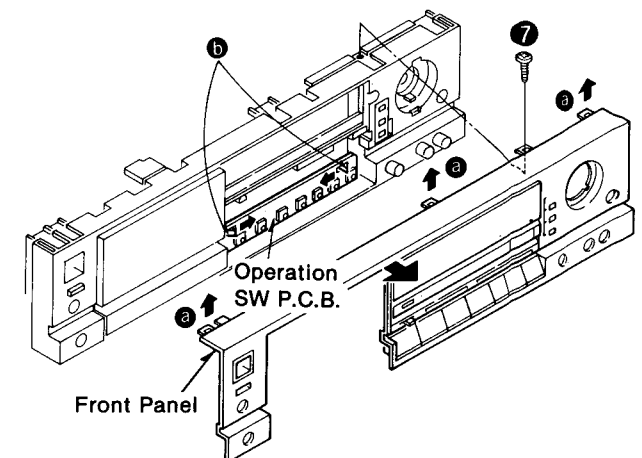


Fig. 6

| Ref. No.<br>6    | How to remove the headphones P.C.B.                                                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------|
| Procedure<br>1→6 | • Remove the 2 screws (6, 7). (See the Fig. 4).<br>• Pull out the headphones volume control knob. (See the Fig. 4). |

## MEASUREMENT AND ADJUSTMENT METHODES

### Measurement Condition

- Input level controls; Maximum
- Timer start switch; Off
- Noise reduction select switch; Off
- Repeat-play switch; Off

### Measuring instrument

- EVM(Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

### Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Multiplex filter switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )

- ATT(Attenuator)
- DC voltmeter
- Resistor (600Ω)

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
- Normal reference blank tape; QZZCRA
- CrO<sub>2</sub> reference blank tape; QZZCRX
- Metal reference blank tape; QZZCRZ

### HEAD AZIMUTH ADJUSTMENT

1. Playback the azimuth adjustment portion (8 kHz, -20 dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

**Note:** If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.

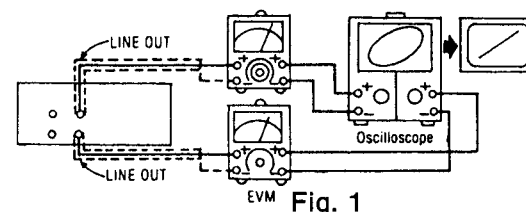


Fig. 1

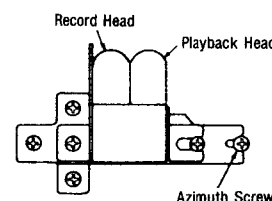


Fig. 2

### TAPE SPEED ADJUSTMENT

1. Playback the middle portion of the test tape (QZZCWAT).  
2. Adjust the VR in the motor (see Fig. 3) so that the output is within the standard value.

Standard value:  $3000 \pm 15$  Hz  
-10

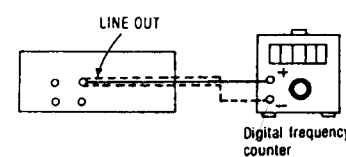


Fig. 3

### PLAYBACK GAIN ADJUSTMENT

1. Playback the gain adjusted portion (315 Hz, 0 dB) of the test tape (QZZCFM).  
2. Adjust VR1 (L-CH) and VR2 (R-CH) so that the output is within the standard value.

Standard value:  $0.4\text{V} \pm 0.5\text{dB}$

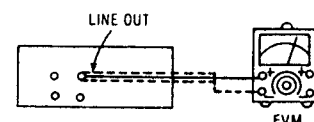


Fig. 4

### PLAYBACK FREQUENCY RESPONSE

1. Playback the frequency response portion (315 Hz, 12.5 kHz ~ 63 Hz, -20 dB) of the test tape (QZZCFM).  
2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

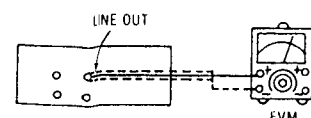


Fig. 5

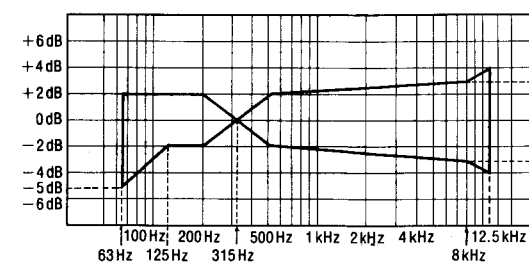


Fig. 6

### FLUORESCENT METER ADJUSTMENT

1. Insert the Normal blank test tape (QZZCRA) and apply a reference input signal (1 kHz, -24 dB) in the Record Pause mode.  
2. Using an attenuator, adjust it until the voltage of the tape decks "LINE OUT" terminals is 0.4V.

#### -40 dB ADJUSTMENT

3. Attenuate the signal input level in step 1, by 40 dB and apply it to the unit.  
4. Adjust VR61 so that the "-40 dB" segment is slightly illuminated.

#### -0 dB ADJUSTMENT

5. Set the input signal level as indicated in step 2 above.  
6. Adjust VR62 so that the "0 dB" segment is slightly illuminated.  
7. Repeat steps 1 ~ 6 above and assure that both the -40 dB and 0 dB segments illuminate slightly.

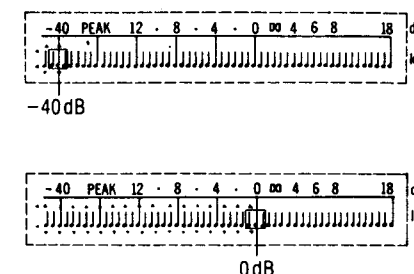


Fig. 7

### OVERALL FREQUENCY RESPONSE

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.  
2. Apply a reference input signal (1 kHz, -24 dB) through an attenuator.  
3. Attenuate the signal by 20 dB and adjust the frequency from 50 Hz ~ 15 kHz.  
4. Record the frequency sweep.  
5. Playback the recorded signal and assure that it is within the range shown in Fig. 9 in comparison to the reference frequency (1 kHz).  
6. If it is not within the standard range, adjust VR301 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.  
● Level up in high frequency range.....Increase the bias current.  
● Level down in high frequency range...Decrease the bias current.  
7. Repeat steps 2 ~ 6 above using the CrO<sub>2</sub> tape(QZZCRX) and the Metal tape(QZZCRZ) increasing the frequency range to 16 kHz (50Hz~16kHz).  
8. Assure that the level is within the range shown in Fig. 10.

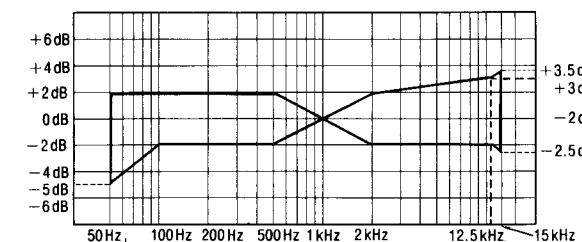


Fig. 9

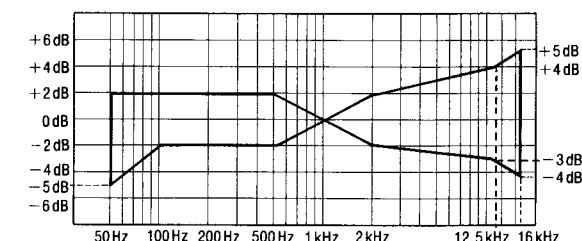


Fig. 10

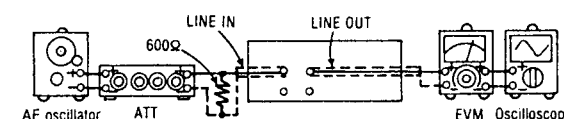


Fig. 8

### OVERALL GAIN ADJUSTMENT

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.  
2. Apply a reference input signal (1 kHz, -24 dB). Attenuate the output so that its level becomes 0.4V.  
3. Record this input signal.  
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.  
5. If it is not within the standard value, adjust VR151 (L-CH) and VR152 (R-CH).  
6. Repeat the step 2 ~ 5 above until the output is within the standard value.

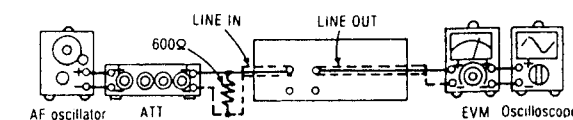


Fig. 11

Standard value:  $0.4\text{V} \pm 0.5\text{dB}$

### HX-PRO ADJUSTMENT

1. Insert the Metal blank tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Connect a DC voltmeter across R325 (L-CH., 10 ohms) and R326 (R-CH., 10 ohms).
3. Adjust L303 (L-CH) and L304 (R-CH) so that the voltage becomes less than 110mV DC.

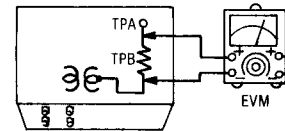


Fig. 12

TPA { TP305 (L-CH)  
TP306 (R-CH) } TPB { R325 (L-CH)  
R326 (R-CH) }

### dbx TIMING ADJUSTMENT

#### ENCODE SIDE

1. Set the noise reduction switch to the dbx position.
2. Apply a 1 kHz signal to LINE IN terminals through an attenuator.
3. Connect an AC voltmeter across R565 (L-CH) and R566 (R-CH). Adjust the input signal level so that the voltage is 20 mV.
4. Connect a DC voltmeter across R550 (TP551) and adjust VR551, so that the voltage becomes 15 mV.

#### DECODE SIDE

5. Repeat steps 1 and 2 above.
6. Connect an AC voltmeter across R515 (L-CH) and R516 (R-CH). Adjust the input signal level so that the voltage is 20 mV.
7. Connect a DC voltmeter across R500 (TP501) and adjust VR501 so that the voltage becomes 15 mV.

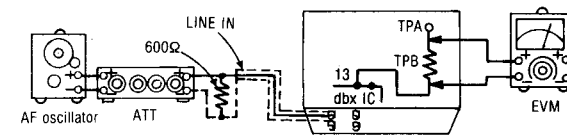


Fig. 13

TPA { TP551 (ENCODE)  
TP501 (DECODE) } TPB { R550 (ENCODE)  
R500 (DECODE) }

### dbx GAIN ADJUSTMENT

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record mode.
2. Apply a 1 kHz signal to the "LINE IN" through an attenuator.
3. Adjust the input level so that the meter reading is 0 dB.
4. Connect an AC voltmeter to the "LINE OUT" terminal.
5. Switch the Monitor switch position between "TAPE" and "SOURCE". Adjust VR553 (L-CH) and VR554 (R-CH) so that the voltage difference at "LINE OUT" is within 0.5 dB.

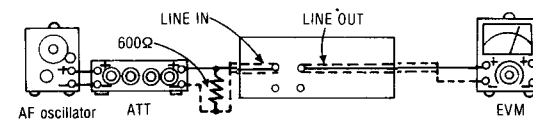
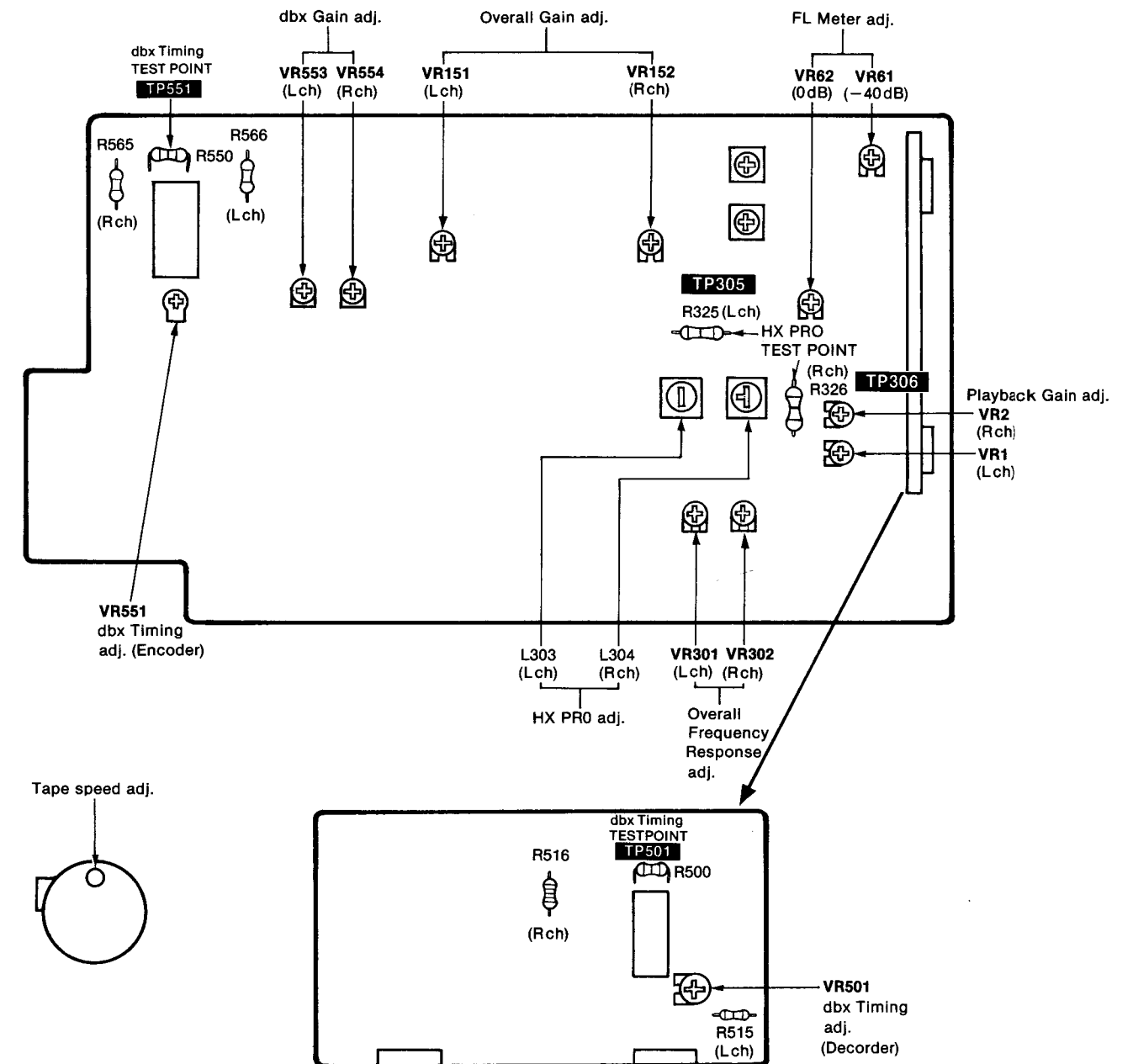
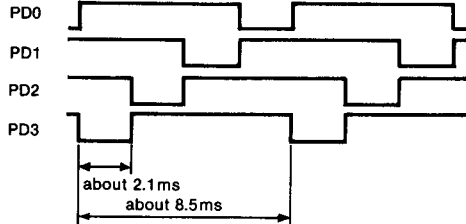
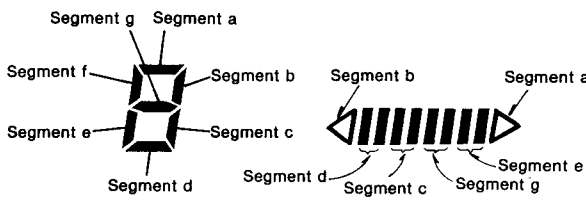
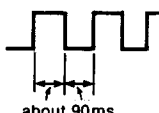
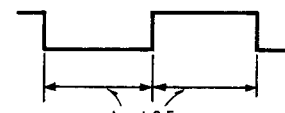


Fig. 14

### • Adjust ment point



■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM  
(IC901: LM6495G-2104)

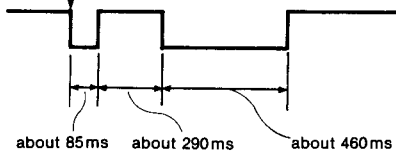
| Terminal No. | Symbol                  | Function/operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
|--------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|------------|-----|-----|-----|---------------|-----|------------|------------|-----|-------|----|-----------|---------|-----|-----|---|------------|---|-----|------|------|------------------|---|
| 1, 42        | XTAL                    | about 800kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 2            | PC0                     | Scan input<br><div>Key scan matrix</div> <table><tr><th></th><th>PD0</th><th>PD1</th><th>PD2</th><th>PD3</th></tr><tr><th>PC0</th><td>auto rec mute</td><td>rew</td><td>Timer play</td><td>REC INH SW</td></tr><tr><th>PC1</th><td>pause</td><td>ff</td><td>Timer rec</td><td>PACK SW</td></tr><tr><th>PC2</th><td>rec</td><td>—</td><td>monitor sw</td><td>—</td></tr><tr><th>PC3</th><td>stop</td><td>play</td><td>Counter Reset sw</td><td>—</td></tr></table>                                                                                          |                  | PD0        | PD1        | PD2 | PD3 | PC0 | auto rec mute | rew | Timer play | REC INH SW | PC1 | pause | ff | Timer rec | PACK SW | PC2 | rec | — | monitor sw | — | PC3 | stop | play | Counter Reset sw | — |
|              | PD0                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PD1              | PD2        | PD3        |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| PC0          | auto rec mute           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | rew              | Timer play | REC INH SW |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| PC1          | pause                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ff               | Timer rec  | PACK SW    |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| PC2          | rec                     | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | monitor sw       | —          |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| PC3          | stop                    | play                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Counter Reset sw | —          |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 3            | PC1                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 4            | PC2                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 5            | PC3                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 6            | $\overline{\text{INT}}$ | Connection of GND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 7            | $\overline{\text{RES}}$ | Reset the microcomputer when power switch is thrown in. Reset at "L".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 8            | PD0                     | Scan output<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 9            | PD1                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 10           | PD2                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 11           | PD3                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 12           | PE0                     | Connection of GND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 13           | PE1                     | <ul style="list-style-type: none"><li>• Segment a (PE 1)</li><li>• Segment b (PE 2)</li><li>• Segment c (PE 3)</li><li>• Segment d (PF 0)</li><li>• Segment e (PF 1)</li><li>• Segment f (PF 2)</li><li>• Segment g (PF 3)</li></ul>  <p>• According to the internal command of IC, the counter number changes with 2 turns of the take-up reel. Also, the running display changes by 1 with 1/2 turn.</p> <p>• Each waveform changes because of dynamic lighting.</p> |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 14           | PE2                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 15           | PE3                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 16           | PF0                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 17           | PF1                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 18           | PF2                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 19           | PF3                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 20           | TEST                    | Connection of GND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 21           | VSS                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 22           | PG0                     | Input of Repeat switch<br>ON..."H" OFF..."L"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 23           | PG1                     | "L" when REC/REC PAUSE mode switch is on mode.<br>"L" when Timer REC mode is power on in about 1.25sec.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 24           | PG2                     | "L" when REC switch is on mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |
| 25           | PG3                     | "L" when PLAY switch is on mode.<br>• MUSIC SELECTOR mode<br><br>• PAUSE mode<br>                                                                                                                                                                                                                                                                                                   |                  |            |            |     |     |     |               |     |            |            |     |       |    |           |         |     |     |   |            |   |     |      |      |                  |   |

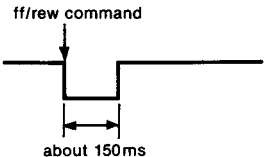
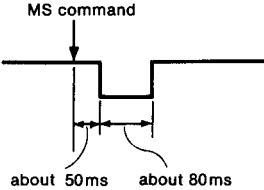
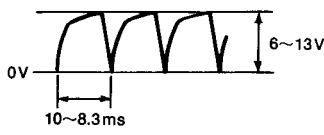
| Terminal No. | Symbol | Function/operation                                                                                                                                |
|--------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 26           | PH0    | "L" when TAPE of MONITOR SELECTOR and POWER switch is on mode.<br>"L" when PLAY from STOP, PAUSE, FF, REW and MS is moving. (auto monitor select) |
| 27           | PH1    | "L" when SOURCE of MONITOR SELECT is ON mode.<br>"L" when REC PAUSE mode from STOP and PAUSE ect is moving.                                       |
| 28           | MSP    | MUSIC SELECTOR, NON RECORDED SPACE pulse input Record..."L"<br>Non-record..."H"                                                                   |
| 29           | PH3    | Source mode..."L"<br>Tape mode..."H"<br>FF/REW/MS..."L"                                                                                           |
| 30           | PI0    | • Meter mute output..."L" (P10)<br>• Lineout mute output..."H" (P11)<br>• REC Amp mute output..."L" (P12)                                         |
| 31           | PI1    |                                                                                                                                                   |
| 32           | PI2    |                                                                                                                                                   |

|                |     | Stop<br>Pause<br>ff/rew | play | Rec pause |        | Rec play |                  |
|----------------|-----|-------------------------|------|-----------|--------|----------|------------------|
|                |     |                         |      | Normal    | A.R.M. | Normal   | Auto Rec<br>Mute |
| TAPE<br>mode   | PI0 | L                       | H    | L         | L      | H        | L                |
|                | PI1 | H                       | L    | H         | H      | L        | L                |
|                | PI2 | L                       | L    | L         | L      | H        | L                |
| SOURCE<br>mode | PI0 | H                       | H    | H         | L      | H        | L                |
|                | PI1 | L                       | L    | L         | L      | L        | L                |
|                | PI2 | L                       | L    | L         | L      | H        | L                |

PI0, PI2 { "H"=Muting OFF  
"L"=Muting ON

PI1 { "H"=Muting ON  
"L"=Muting OFF

|    |     |                                                                                                                                                                                                                                                           |
|----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | PA0 | FF/REW motor speed control<br>PLAY mode..."L"                                                                                                                                                                                                             |
| 34 | PA1 | FF/REW motor drive<br>REW mode..."H"                                                                                                                                                                                                                      |
| 35 | PA2 | FF/REW motor drive<br>FF mode..."H"                                                                                                                                                                                                                       |
| 36 | PA3 | Capstan motor drive<br>STOP/PAUSE/FF/REW/MS mode..."H"<br>PLAY mode..."L"                                                                                                                                                                                 |
| 37 | PB0 | Plunger drive<br>During music select mode, plunger attraction is maintained to keep Cue/Review mode.                                                                                                                                                      |
| 38 | PB1 | Plunger drive<br>Mechanism mode selector control output<br>• STOP...PLAY<br><div><div>play command</div><div>about 85 ms    about 290 ms    about 460 ms</div></div> |

| Terminal No. | Symbol          | Function/operation                                                                                                                                                                                                                                                 |
|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38           | PB1             | <p>• STOP...FF/REW</p>  <p>about 150ms</p> <p>• PLAY...MS</p>  <p>about 50ms      about 80ms</p> |
| 39           | PB2             | <p>• Reel base pulse</p> <p>Reel base rotation is detected by photo sensor. Pulses are used for tape-end detection and counter up/down.</p>                                                                                                                        |
| 40           | POF             | <p>Power of DET</p>  <p>0V</p> <p>10~8.3ms</p> <p>6~13V</p>                                                                                                                      |
| 41           | V <sub>DD</sub> | Operative on about 5V                                                                                                                                                                                                                                              |

# RESISTORS & CAPACITORS

## Notes: \* Important safety notice:

Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

\* Bracketed indications in Ref. No. columns specify the area.

Parts without these indications can be used for all areas.

## Numbering System of Resistor

### Example

|      |         |       |           |                          |
|------|---------|-------|-----------|--------------------------|
| ERD  | 25      | F     | J         | 102                      |
| Type | Wattage | Shape | Tolerance | Value                    |
| ERX  | 2       | AN    | J         | 471                      |
| Type | Wattage | Shape | Tolerance | Value                    |
|      |         |       |           | 47x10 <sup>1</sup> (ohm) |

## Numbering System of Capacitor

### Example

|      |         |             |           |                                 |
|------|---------|-------------|-----------|---------------------------------|
| ECKD | 1H      | 102         | Z         | F                               |
| Type | Voltage | Value       | Tolerance | Peculiarity                     |
| ECEA | 50      | M           |           | 330                             |
| Type | Voltage | Peculiarity |           | Value                           |
|      |         |             |           | (33x10 <sup>0</sup> microfarad) |

| Resistor Type                 | Wattage   | Tolerance |
|-------------------------------|-----------|-----------|
| ERD : Carbon                  | 10 : 1/8W | J : ±5%   |
| ERG : Metal Oxide             | 12 : 1/2W | F : ±1%   |
| ERX : Metal Film              | 25 : 1/4W | G : ±2%   |
| ERQ : Fuse Type Metal         | 1A : 1W   | K : ±10%  |
| ERD [ ] L : Carbon (chip)     | 18 : 1/8W |           |
| ERO [ ] K : Metal Film (chip) | S2 : 1/4W |           |
| ERC : Solid                   | S1 : 1/2W |           |
|                               | 2F : 1/4W |           |
|                               | 50 : 1/2W |           |
|                               | 2A : 2W   |           |

| Capacitor Type                                   | Voltage          | Tolerance   |
|--------------------------------------------------|------------------|-------------|
| ECE : Electrolytic                               | 0J : 6.3V        | C : ±0.25pF |
| ECCD : Ceramic                                   | 1A : 10V         | J : ±5%     |
| ECKD : Ceramic                                   | 1C : 16V         | K : ±10%    |
| ECQM : Polyester                                 | 1E : 25V         | Z : +80%    |
|                                                  | 1H : 50V         | -20%        |
| ECQP : Polypropylene                             | 1V : 35V         | P : +100%   |
|                                                  | 50 : 50V         | -0%         |
| ECG : Ceramic                                    | 05 : 50V         | M : ±20%    |
| ECEA [ ] N : Non Polar Electrolytic              | 2H : 500V        |             |
|                                                  | 2A : 100V        | D : ±0.5pF  |
| QCU [ ] : Ceramic (Chip Type)                    | 1 : 100V         | G : ±2%     |
| ECUX : Ceramic (Chip Type)                       | KC : 400V AC     |             |
| ECF : Semiconductor                              | KC : 125VAC (UL) |             |
|                                                  | 1J : 63V         |             |
| EECW : Liquid electrolyte double layer capacitor |                  |             |

| Ref. No.        | Part No.   | Part Code      | Ref. No.   | Part No.   | Part Code      | Ref. No.        | Part No.   | Part Code      |
|-----------------|------------|----------------|------------|------------|----------------|-----------------|------------|----------------|
| RESISTORS       |            |                | R75, R76   | ERD25FJ122 | 001 152 0226 9 | R221            | ERD25FJ331 | 001 152 0286 7 |
| R1, R2          | ERDS2TJ683 | 001 152 2450 5 | R80        | ERDS2TJ104 | 001 152 2348 2 | R222, R223      | ERDS2TJ103 | 001 152 2347 3 |
| R3, R4          | ERDS2TJ101 | 001 152 2421 0 | R101, R102 | ERDS2TJ333 | 001 152 2358 0 | R224, R225      | ERDS2TJ103 | 001 152 2347 3 |
| R5, R6          | ERDS2TJ684 | 001 152 2451 4 | R103, R104 | ERDS2TJ184 | 001 152 2588 8 | R226            | ERDS2TJ103 | 001 152 2347 3 |
| R7, R8          | ERDS2TJ183 | 001 152 2429 2 | R105, R106 | ERDS2TJ242 | 001 152 3150 0 | R227            | ERDS2TJ822 | 001 152 2455 0 |
| R9, R10         | ERDS2TJ103 | 001 152 2347 3 | R107, R108 | ERDS2TJ473 | 001 152 2363 3 | R228            | ERDS2TJ682 | 001 152 2365 1 |
| R11, R12        | ERDS2TJ223 | 001 152 2432 7 | R109, R110 | ERDS2TJ242 | 001 152 3150 0 | R231            | ERD25TJ473 | 001 152 1904 0 |
| R13, R14        | ERDS2TJ223 | 001 152 2432 7 | R111, R112 | ERDS2TJ684 | 001 152 2451 4 | R232            | ERDS2TJ223 | 001 152 2432 7 |
| R15, R16        | ERDS2TJ155 | 001 152 2766 8 | R113, R114 | ERDS2TJ684 | 001 152 2451 4 | R301            | ERD25FJ180 | 001 152 0208 1 |
| R17, R18        | ERDS2TJ223 | 001 152 2432 7 | R117, R118 | ERDS2TJ912 | 001 152 3003 0 | R303, R304      | ERDS2TJ223 | 001 152 2432 7 |
| R19, R20        | ERDS2TJ183 | 001 152 2429 2 | R151, R152 | ERD25TJ223 | 001 152 1863 2 | R305, R306      | ERD25FJ180 | 001 152 0246 5 |
| R21, R22        | ERDS2TJ331 | 001 152 2356 2 | R153, R154 | ERDS2TJ472 | 001 152 2362 4 | R307            | ERD25FJ221 | 001 152 0260 7 |
| R23             | ERDS2TJ222 | 001 152 2353 5 | R157, R158 | ERDS2TJ102 | 001 152 2346 4 | (M, MC)         |            |                |
| R51             | ERD25FJ820 | 001 152 0353 3 | R159, R160 | ERDS2TJ273 | 001 152 2436 3 | R307            | ERG2SJ221  | 001 151 3783 8 |
| (M, MC)         |            |                | R161, R162 | ERDS2TJ822 | 001 152 2455 0 | [E, EG, EK, EH] |            |                |
| R51             | ERG2SJ820  | 001 151 5680 6 | R163, R164 | ERDS2TJ121 | 001 152 2349 1 | (XL, XA, XB)    |            |                |
| (E, EG, EK, EH) |            |                | R165, R166 | ERDS2TJ331 | 001 152 2356 2 | R308            | ERD25FJ561 | 001 152 0327 5 |
| (XL, XA, XB)    |            |                | R167, R168 | ERDS2TJ151 | 001 152 2426 5 | (M, MC)         |            |                |
| R52             | ERD25FJ820 | 001 152 0353 3 | R169, R170 | ERDS2TJ222 | 001 152 2353 5 | R308            | ERG1SJ561  | 001 151 4890 2 |
| (M, MC)         |            |                | R171, R172 | ERDS2TJ471 | 001 152 2361 5 | [E, EG, EK, EH] |            |                |
| R52             | ERG2SJ820  | 001 151 5680 6 | R173, R174 | ERDS2TJ122 | 001 152 2423 8 | (XL, XA, XB)    |            |                |
| (E, EG, EK, EH) |            |                | R175, R176 | ERDS2TJ102 | 001 152 2346 4 | R315, R316      | ERDS2TJ154 | 001 152 2427 4 |
| (XL, XA, XB)    |            |                | R177, R178 | ERDS2TJ330 | 001 152 2355 3 | R317, R318      | ERDS2TJ333 | 001 152 2358 0 |
| R53             | ERD25FJ820 | 001 152 0353 3 | R179, R180 | ERDS2TJ332 | 001 152 2357 1 | R321            | ERDS2TJ332 | 001 152 2357 1 |
| (M, MC)         |            |                | R181, R182 | ERDS2TJ100 | 001 152 2420 1 | R322            | ERDS2TJ682 | 001 152 2365 1 |
| R53             | ERG2SJ820  | 001 151 5680 6 | R183, R184 | ERDS2TJ102 | 001 152 2346 4 | R323            | ERDS2TJ102 | 001 152 2346 4 |
| (E, EG, EK, EH) |            |                | R185, R186 | ERDS2TJ682 | 001 152 2365 1 | R324            | ERD25FJ103 | 001 152 0216 1 |
| (XL, XA, XB)    |            |                | R201       | ERDS2TJ103 | 001 152 2347 3 | R325            | ERD2FCG100 | 001 152 0185 1 |
| R54             | ERD25FJ820 | 001 152 0353 3 | R202       | ERDS2TJ152 | 001 152 2350 8 | [E, EG, EK, EH] |            |                |
| (M, MC)         |            |                | R203       | ERDS2TJ101 | 001 152 2421 0 | (XL, XA, XB)    |            |                |
| R54             | ERG2SJ820  | 001 151 5680 6 | R204, R206 | ERDS2TJ473 | 001 152 2363 3 | R325            | ERD25FJ100 | 001 152 0213 4 |
| (E, EG, EK, EH) |            |                | R207       | ERDS2TJ103 | 001 152 2347 3 | (M, MC)         |            |                |
| (XL, XA, XB)    |            |                | R208       | ERDS2TJ332 | 001 152 2357 1 | R326            | ERD2FCG100 | 001 152 0185 1 |
| R60             | ERDS2TJ222 | 001 152 2353 5 | R209       | ERDS2TJ223 | 001 152 2432 7 | [E, EG, EK, EH] |            |                |
| R61, R62        | ERDS2TJ684 | 001 152 2451 4 | R210       | ERDS2TJ333 | 001 152 2358 0 | (XL, XA, XB)    |            |                |
| R63, R64        | ERD25FJ152 | 001 152 0237 6 | R211       | ERDS2TJ472 | 001 152 2362 4 | R326            | ERD25FJ100 | 001 152 0213 4 |
| R65, R66        | ERDS2TJ103 | 001 152 2347 3 | R212       | ERD25FJ472 | 001 152 0311 3 | (M, MC)         |            |                |
| R67, R68        | ERDS2TJ103 | 001 152 2347 3 | R213       | ERD25FJ103 | 001 152 0216 1 | R331, R332      | ERD25FJ100 | 001 152 0213 4 |
| R69             | ERDS2TJ562 | 001 152 2445 2 | R214, R215 | ERD25TJ223 | 001 152 1863 2 | R333            | ERD25TJ473 | 001 152 1904 0 |
| R70             | ERDS2TJ471 | 001 152 2361 5 | R216, R217 | ERDS2TJ103 | 001 152 2347 3 | R334            | ERD25FJ152 | 001 152 0237 6 |
| R71, R72        | ERDS2TJ102 | 001 152 2346 4 | R218       | ERDS2TJ103 | 001 152 2347 3 | R335            | ERDS2TJ472 | 001 152 2362 4 |
| R73, R74        | ERDS2TJ562 | 001 152 2445 2 | R219       | ERDS2TJ223 | 001 152 2432 7 | R336            | ERDS2TJ104 | 001 152 2348 2 |
|                 |            |                | R220       | ERD25TJ223 | 001 152 1863 2 | R337            | ERD25TJ154 | 001 152 0450 3 |

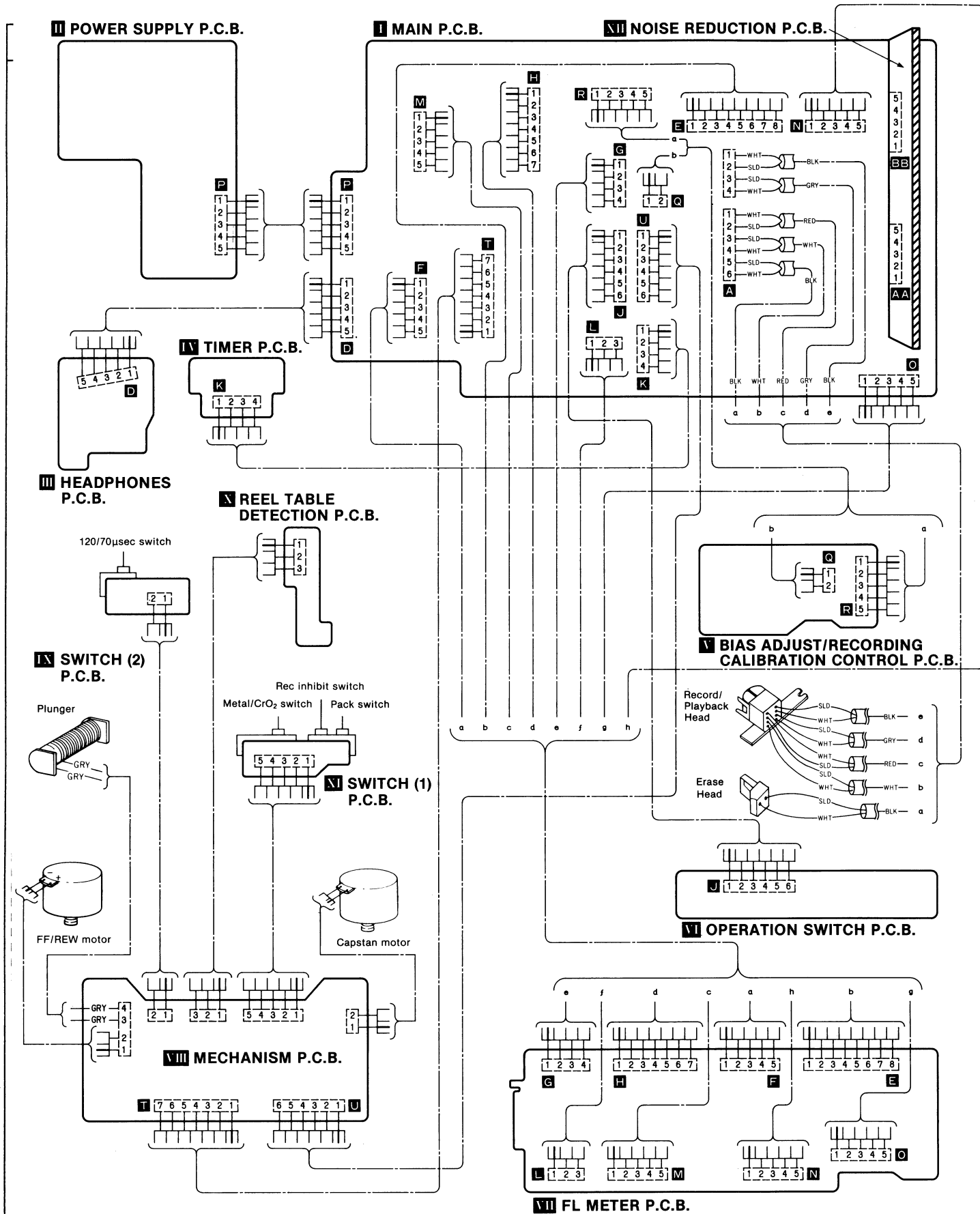
## RESISTORS & CAPACITORS

| Ref. No.   | Part No.   | Part Code      | Ref. No.        | Part No.   | Part Code      | Ref. No.         | Part No.     | Part Code      |
|------------|------------|----------------|-----------------|------------|----------------|------------------|--------------|----------------|
| R401       | ERDS2TJ473 | 001 152 2363 3 | (M, MC)         |            |                | (E, EG, EK, EH)  |              |                |
| R405, R406 | ERDS2TJ112 | 001 152 3889 4 | R599            | ERG1SJ151  | 001 151 2990 7 | (XL, XA, XB)     |              |                |
| R409, R410 | ERDS2TJ332 | 001 152 2357 1 | (E, EG, EK, EH) |            |                | R937             | ERDS2TJ271   | 001 152 2435 4 |
| R411, R412 | ERDS2TJ102 | 001 152 2346 4 | (XL, XA, XB)    |            |                | R938             | ERD2FCJ47    | 001 152 2480 9 |
| R413, R414 | ERDS2TJ333 | 001 152 2358 0 | R603            | ERD25FJ331 | 001 152 0286 7 | (E, EG, EK, EH)  |              |                |
| R415, R416 | ERDS2TJ823 | 001 152 2456 9 | R604            | ERD25FJ561 | 001 152 0327 5 | (XL, XA, XB)     |              |                |
| R417, R418 | ERDS2TJ512 | 001 152 2596 8 | R607            | ERD25FJ822 | 001 152 0355 1 | R938             | ERG1SJ330    | 001 151 2991 6 |
| R419, R420 | ERDS2TJ683 | 001 152 2450 5 | R608            | ERDS2TJ682 | 001 152 2365 1 | (M, MC)          |              |                |
| R421, R422 | ERDS2TJ222 | 001 152 2353 5 | R611            | ERD25FJ221 | 001 152 0260 7 | R939             | ERDS2TJ392   | 001 152 2439 0 |
| R423, R424 | ERDS2TJ823 | 001 152 2456 9 | (M, MC)         |            |                | R940             | ERD25FJ391   | 001 152 0299 2 |
| R433       | ERD25FJ752 | 001 152 0349 9 | R611            | ERG1SJ221  | 001 151 3084 8 | R941, R943       | ERDS2TJ103   | 001 152 2347 3 |
| R434       | ERDS2TJ752 | 001 152 2894 1 | (E, EG, EK, EH) |            |                | R944             | ERDS2TJ223   | 001 152 2432 7 |
| R435       | ERD25TJ473 | 001 152 1904 0 | (XL, XA, XB)    |            |                | R945             | ERDS2TJ682   | 001 152 2365 1 |
| R444       | ERDS2TJ472 | 001 152 2362 4 | R612            | ERDS2TJ152 | 001 152 2350 8 | R946             | ERDS2TJ471   | 001 152 2361 5 |
| R455, R456 | ERDS2TJ102 | 001 152 2346 4 | R707            | ERDS2TJ102 | 001 152 2346 4 | R951             | ERDS2TJ331   | 001 152 2356 2 |
| R457, R458 | ERDS2TJ123 | 001 152 2424 7 | R711            | ERDS2TJ101 | 001 152 2421 0 | R953, R954       | ERG2SJ330    | 001 151 4037 1 |
| R459, R460 | ERDS2TJ332 | 001 152 2357 1 | (M, MC)         |            |                | (E, EG, EK, EH)  |              |                |
| R461, R462 | ERDS2TJ102 | 001 152 2346 4 | R711            | ERD2FCG101 | 001 152 0186 0 | (XL, XA, XB)     |              |                |
| R463, R464 | ERDS2TJ333 | 001 152 2358 0 | (E, EG, EK, EH) |            |                | CAPACITORS       |              |                |
| R465, R466 | ERDS2TJ823 | 001 152 2456 9 | (XL, XA, XB)    |            |                | C1, C2           | ECBT1H221KB  | 001 103 3519 2 |
| R467, R468 | ERDS2TJ512 | 001 152 2596 8 | R713            | ERDS2TJ103 | 001 152 2347 3 | C3, C4           | ECCF1H121J   | 001 103 0378 9 |
| R469, R470 | ERDS2TJ683 | 001 152 2450 5 | R715            | ERDS2TJ181 | 001 152 2428 3 | C5, C6           | ECEA0J5221   | 001 120 2925 9 |
| R471, R472 | ERDS2TJ222 | 001 152 2353 5 | (M, MC)         |            |                | C7, C8           | ECCF1H121J   | 001 103 0378 9 |
| R473, R474 | ERDS2TJ823 | 001 152 2456 9 | R715            | ERD2FCG181 | 001 152 0189 7 | C9, C10          | ECQM1H472JZ  | 001 106 0801 0 |
| R491       | ERDS2TJ103 | 001 152 2347 3 | (E, EG, EK, EH) |            |                | C11, C12         | ECCD1H470K   | 001 103 0627 1 |
| R492       | ERD25FJ103 | 001 152 0216 1 | (XL, XA, XB)    |            |                | C13, C14         | ECKD1H152KB  | 001 103 1467 5 |
| R493       | ERDS2TJ103 | 001 152 2347 3 | R716            | ERDS2TJ181 | 001 152 2428 3 | C21, C22         | ECEA1CU100   | 001 120 2905 3 |
| R495       | ERDS2TJ473 | 001 152 2363 3 | (M, MC)         |            |                | C51, C52         | ECEA1AU331   | 001 120 3649 6 |
| R500       | ERD25FJ102 | 001 152 0215 2 | R716            | ERD2FCG181 | 001 152 0189 7 | C53, C54         | ECEA1AU331   | 001 120 3649 6 |
| R503, R504 | ERDS2TJ274 | 001 152 2437 2 | (E, EG, EK, EH) |            |                | C61              | ECEA1CU222   | 001 120 3074 3 |
| R505       | ERD25FJ822 | 001 152 0355 1 | (XL, XA, XB)    |            |                | (E, EG, EK)      |              |                |
| R506       | ERDS2TJ822 | 001 152 2455 0 | R731            | ERDS2TJ103 | 001 152 2347 3 | (EH, XL, XA)(XB) |              |                |
| R507, R508 | ERDS2TJ122 | 001 152 2423 8 | R733, R734      | ERDS2TJ273 | 001 152 2436 3 | C61 (M, MC)      | ECEA50ZR68   | 001 120 1290 5 |
| R509, R510 | ERDS2TJ154 | 001 152 2427 4 | R735, R736      | ERDS2TJ124 | 001 152 2425 6 | C62              | ECEA50ZR68   | 001 120 1290 5 |
| R511, R512 | ERDS2TJ104 | 001 152 2348 2 | R739            | ERDS2TJ121 | 001 152 2349 1 | C63, C64         | ECEA1H2R2    | 001 120 3253 2 |
| R513, R514 | ERDS2TJ104 | 001 152 2348 2 | (M, MC)         |            |                | C65              | ECEA1EU101   | 001 120 2837 8 |
| R515, R516 | ERDS2TJ332 | 001 152 2357 1 | R739, R740      | ERD2FCG121 | 001 152 0187 9 | C67              | ECEA1HSR33   | 001 120 3248 9 |
| R517, R518 | ERDS2TJ472 | 001 152 2362 4 | (E, EG, EK, EH) |            |                | C69              | ECEA1H2R2    | 001 120 3253 2 |
| R519, R520 | ERDS2TJ153 | 001 152 2351 7 | (XL, XA, XB)    |            |                | C71, C72         | ECEA1CU100   | 001 120 2905 3 |
| R521, R522 | ERDS2TJ333 | 001 152 2358 0 | R740            | ERD25FJ121 | 001 152 0225 0 | C73, C74         | ECKD1H122KB  | 001 103 1459 5 |
| R523, R524 | ERDS2TJ244 | 001 152 2767 7 | (M, MC)         |            |                | C75, C76         | ECEA1CU100   | 001 120 2905 3 |
| R525, R526 | ERDS2TJ472 | 001 152 2362 4 | R741, R742      | ERD25FJ680 | 001 152 0341 7 | C101, C102       | ECEA1H2R2    | 001 120 3253 2 |
| R527, R528 | ERDS2TJ153 | 001 152 2351 7 | R751            | ERDS2TJ222 | 001 152 2353 5 | C103, C104       | ECCD1H470K   | 001 103 0627 1 |
| R529, R530 | ERDS2TJ153 | 001 152 2351 7 | R752            | ERDS2TJ472 | 001 152 2362 4 | C105, C106       | ECEA1CU100   | 001 120 2905 3 |
| R531, R532 | ERDS2TJ332 | 001 152 2357 1 | R753            | ERD25TJ123 | 001 152 2077 6 | C107, C108       | ECKD1H152KB  | 001 103 1467 5 |
| R533, R534 | ERDS2TJ103 | 001 152 2347 3 | R754, R755      | ERDS2TJ333 | 001 152 2358 0 | C109, C110       | ECKD1H122KB  | 001 103 1459 5 |
| R535, R536 | ERDS2TJ102 | 001 152 2346 4 | R756, R757      | ERDS2TJ333 | 001 152 2358 0 | C111, C112       | ECEA1CU220   | 001 120 2906 2 |
| R537, R538 | ERDS2TJ151 | 001 152 2426 5 | R761, R762      | ERDS2TJ392 | 001 152 2439 0 | C115, C116       | ECEA1H2R2    | 001 120 2842 1 |
| R539, R540 | ERDS2TJ223 | 001 152 2432 7 | R901            | ERD2FCG100 | 001 152 0185 1 | C121             | ECEA1EU47    | 001 120 2840 3 |
| R541, R542 | ERDS2TJ682 | 001 152 2365 1 | (E, EG, EK, EH) |            |                | C153, C154       | ECBT1H221KB  | 001 103 3519 2 |
| R543, R544 | ERDS2TJ102 | 001 152 2346 4 | (XL, XA, XB)    |            |                | C155, C156       | ECEA1HSR33   | 001 120 3248 9 |
| R547       | ERDS2TJ472 | 001 152 2362 4 | R901            | ERD25FJ100 | 001 152 0213 4 | C157, C158       | ECQM1H183JZ  | 001 106 0723 7 |
| R550       | ERD25FJ102 | 001 152 0215 2 | (M, MC)         |            |                | C159, C160       | ECQM1H822JZ  | 001 106 0845 8 |
| R553, R554 | ERDS2TJ473 | 001 152 2363 3 | R902            | ERDS2TJ821 | 001 152 2454 1 | C161, C162       | ECQM1H562JZ  | 001 106 0820 7 |
| R555, R556 | ERDS2TJ682 | 001 152 2365 1 | R903            | ERDS2TJ332 | 001 152 2357 1 | C165, C166       | ECQM1H183JV  | 001 120 2842 1 |
| R557, R558 | ERDS2TJ152 | 001 152 2350 8 | R904            | ERDS2TJ103 | 001 152 2347 3 | C169, C170       | ECQM1H183JV  | 001 120 2842 1 |
| R559, R560 | ERDS2TJ154 | 001 152 2427 4 | R905            | ERDS2TJ683 | 001 152 2450 5 | C173, C174       | ECEA1H2R2    | 001 120 3253 2 |
| R561, R562 | ERDS2TJ104 | 001 152 2348 2 | R906            | ERDS2TJ105 | 001 152 2422 9 | C175, C176       | ECBT1H561KB5 | 001 103 9079 1 |
| R563, R564 | ERDS2TJ563 | 001 152 2446 1 | R912, R913      | ERD25TJ473 | 001 152 1904 0 | C177, C178       | ECCF1H121J   | 001 103 0378 9 |
| R565, R566 | ERDS2TJ332 | 001 152 2357 1 | R914, R915      | ERD25TJ473 | 001 152 1904 0 | C202             | ECQM1H822JZ  | 001 106 0845 8 |
| R567, R568 | ERDS2TJ472 | 001 152 2362 4 | R919, R920      | ERDS2TJ105 | 001 152 2422 9 | C203             | ECEA1CU100   | 001 120 2905 3 |
| R569, R570 | ERDS2TJ153 | 001 152 2351 7 | R921, R922      | ERDS2TJ821 | 001 152 2454 1 | C204             | ECCD1H470K   | 001 103 0627 1 |
| R571, R572 | ERDS2TJ333 | 001 152 2358 0 | R923            | ERDS2TJ821 | 001 152 2454 1 | C205             | ECEA1H2R2    | 001 120 2842 1 |
| R573, R574 | ERDS2TJ244 | 001 152 2767 7 | R924, R925      | ERDS2TJ103 | 001 152 2347 3 | C212             | ECEA1H2R2    | 001 120 2905 3 |
| R575, R576 | ERDS2TJ472 | 001 152 2362 4 | R926            | ERDS2TJ473 | 001 152 2363 3 | C213             | ECEA1CU470   | 001 120 2835 0 |
| R577, R578 | ERDS2TJ153 | 001 152 2351 7 | R927            | ERDS2TJ122 | 001 152 2423 8 | C220             | ECEA1CN4R7A  | 001 120 2868 1 |
| R579, R580 | ERDS2TJ153 | 001 152 2351 7 | R928            | ERDS2TJ561 | 001 152 2364 2 | C221             | ECEA1EU47    | 001 120 2840 3 |
| R581, R582 | ERDS2TJ332 | 001 152 2357 1 | R929            | ERDS2TJ471 | 001 152 2361 5 | C301             | ECQP1153JZW  | 001 106 3505 3 |
| R583, R584 | ERDS2TJ103 | 001 152 2347 3 | R930            | ERDS2TJ122 | 001 152 2423 8 | C302             | ECCW1H10005  | 001 103 6137 0 |
| R585, R586 | ERDS2TJ102 | 001 152 2346 4 | R932            | ERDS2TJ103 | 001 152 2347 3 | C303             | ECQM1H562JZ  | 001 106 0820 7 |
| R587, R588 | ERDS2TJ151 | 001 152 2426 5 | R933            | ERG2SJ330  | 001 151 4037 1 | C304, C305       | ECQM1H472JZ  | 001 106 0801 0 |
| R589, R590 | ERDS2TJ153 | 001 152 2351 7 | (M, MC)         |            |                | C306             | ECQM1H472JZ  | 001 106 0801 0 |
| R591, R592 | ERDS2TJ472 | 001 152 2362 4 | R934            | ERDS2TJ103 | 001 152 2347 3 | C307             | ECEA1EU101   | 001 120 2837 8 |
| R593, R594 | ERDS2TJ102 | 001 152 2346 4 | R935            | ERX1SJ47   | 001 151 2922 9 | C315, C316       | ECCD1H223PF  | 001 103 1510 9 |
| R597       | ERDS2TJ472 | 001 152 2362 4 | (E, EG, EK, EH) |            |                | C317, C318       | ECCF1H121J   | 001 103 0378 9 |
| R598       | ERDS2TJ103 | 001 152 2347 3 | (XL, XA, XB)    |            |                | C319, C320       | ECBA1H681KB5 | 001 103 9167 2 |
| R599       | ERD25FJ151 | 001 152 0236 7 | R936            | ERX2SJ47   | 001 151 3611 7 |                  |              |                |

## RESISTORS & CAPACITORS

| Ref. No.   | Part No.     | Part Code      | Ref. No.   | Part No.    | Part Code      | Ref. No.     | Part No.       | Part Code      |
|------------|--------------|----------------|------------|-------------|----------------|--------------|----------------|----------------|
| C321, C322 | ECBT1H561KB5 | 001 103 9079 1 | C503, C504 | ECKD1H122KB | 001 103 1459 5 | C585, C586   | ECQM1H472JZ    | 001 106 0801 0 |
| C323, C324 | ECQM1H223JZ  | 001 106 0739 9 | C505, C506 | ECQM1H183JZ | 001 106 0723 7 | C587, C588   | ECCD1H391J     | 001 103 6042 6 |
| C325, C326 | ECQV1H104JZ  | 001 106 2571 7 | C511, C512 | ECEA1HSR33  | 001 120 3248 9 | C589         | ECEA1HU010     | 001 120 2842 1 |
| C327, C328 | ECQM1H103JZ  | 001 106 0667 8 | C513, C514 | ECCD1H391J  | 001 103 0605 7 | C590, C591   | ECEA1CU100     | 001 120 2905 3 |
| C330       | ECEA1CU100   | 001 120 2905 3 | C515, C516 | ECEA50ZR68  | 001 120 1290 5 | C592, C597   | ECEA1CU100     | 001 120 2905 3 |
| C403, C404 | ECQM1H472JZ  | 001 106 0801 0 | C517, C518 | ECQV1H104JZ | 001 106 2571 7 | C599         | ECEA1AU331     | 001 120 3649 6 |
| C405, C406 | ECEA1CU100   | 001 120 2905 3 | C519, C520 | ECQV1H104JZ | 001 106 2571 7 | C601         | ECEA25V2200    | 001 120 3126 8 |
| C407, C408 | ECQM1H473JZ  | 001 106 0810 9 | C521, C522 | ECQM1H332JZ | 001 106 0774 6 | C602         | △ ECEA25V2200  | 001 120 3126 8 |
| C409, C410 | ECQV1H224JZ  | 001 106 3625 6 | C523, C524 | ECQM1H332JZ | 001 106 0774 6 | C603, C604   | △ ECKD1H223PF  | 001 103 1510 9 |
| C411, C412 | ECEA50ZR68   | 001 120 1290 5 | C525, C526 | ECCD1H391J  | 001 103 0605 7 | C605, C606   | △ ECEA1CU331   | 001 120 3200 5 |
| C413, C414 | ECQM1H103JZ  | 001 106 0667 8 | C527, C528 | ECQM1H333JZ | 001 106 0779 1 | C607         | ECEA1CU332     | 001 120 3201 4 |
| C415, C416 | ECQM1H472JZ  | 001 106 0801 0 | C529, C530 | ECEA1HSR33  | 001 120 3248 9 | C610         | △ ECKD1H223PF  | 001 103 1510 9 |
| C417, C418 | ECEA1CU100   | 001 120 2905 3 | C531, C532 | ECEA16Z10   | 001 120 0699 8 | C615         | △ ECKDKC103PF2 | 001 103 3734 7 |
| C419, C420 | ECQM1H473JZ  | 001 106 0810 9 | C533, C534 | ECEA0JU470  | 001 120 3125 9 | C616         | ECEA1CU101     | 001 120 2926 8 |
| C421, C422 | ECQV1H224JZ  | 001 106 3625 6 | C535, C536 | ECQM1H472JZ | 001 106 0801 0 | C617         | ECEA1VU470     | 001 120 2843 0 |
| C423, C424 | ECEA50ZR68   | 001 120 1290 5 | C537, C538 | ECQM1H153JZ | 001 106 0704 0 | C701         | ECQV1H393JZW   | 001 106 5328 4 |
| C431, C432 | ECEA1EU47    | 001 120 2840 3 | C539       | ECEA1HU010  | 001 120 2842 1 | C711, C712   | ECEA1EU47      | 001 120 2840 3 |
| C433, C434 | ECEA1CU100   | 001 120 2905 3 | C540, C541 | ECEA1CU100  | 001 120 2905 3 | C715, C716   | RCBS1H220JCY   | 001 103 5600 2 |
| C444       | ECEA1HU010   | 001 120 2842 1 | C542       | ECEA1CU100  | 001 120 2905 3 | C752         | ECQM1H103JZ    | 001 106 0667 8 |
| C451, C452 | ECEA1CU100   | 001 120 2905 3 | C543, C544 | ECQM1H332JZ | 001 106 0774 6 | C901         | ECKD1H122KB    | 001 103 1459 5 |
| C453, C454 | ECQM1H472JZ  | 001 106 0801 0 | C547       | ECEA1CK5100 | 001 120 2600 7 | C902         | ECEA1CU100     | 001 120 2905 3 |
| C455, C456 | ECEA1CU100   | 001 120 2905 3 | C561, C562 | ECEA1HU010  | 001 120 2842 1 | C903         | △ ECKD1H223PF  | 001 103 1510 9 |
| C457, C458 | ECQM1H473JZ  | 001 106 0810 9 | C563, C564 | ECQM1H223JZ | 001 106 0739 9 | C904         | ECEA1EU47      | 001 120 2840 3 |
| C459, C460 | ECQV1H224JZ  | 001 106 3625 6 | C565, C566 | ECEA50ZR68  | 001 120 1290 5 | C905         | ECEA1H2R2      | 001 120 3253 2 |
| C461, C462 | ECEA50ZR68   | 001 120 1290 5 | C567, C568 | ECQV1H104JZ | 001 106 2571 7 | C906, C907   | ECBT1H221KB    | 001 103 3519 2 |
| C463, C464 | ECQM1H103JZ  | 001 106 0667 8 | C569, C570 | ECQV1H104JZ | 001 106 2571 7 | C908         | △ ECKD1H103PF  | 001 103 1449 7 |
| C465, C466 | ECQM1H472JZ  | 001 106 0801 0 | C571, C572 | ECQM1H332JZ | 001 106 0774 6 | C911         | ECEA1CN100S    | 001 120 0233 8 |
| C467, C468 | ECEA1CU100   | 001 120 2905 3 | C573, C574 | ECQM1H332JZ | 001 106 0774 6 | C912         | ECEA1CU470     | 001 120 2835 0 |
| C469, C470 | ECQM1H473JZ  | 001 106 0810 9 | C575, C576 | ECCD1H391J  | 001 103 6042 6 | C915         | ECKD1H152KB    | 001 103 1467 5 |
| C471, C472 | ECQV1H224JZ  | 001 106 3625 6 | C577, C578 | ECQM1H333JZ | 001 106 0779 1 | (E, EG, EK)  |                |                |
| C473, C474 | ECEA50ZR68   | 001 120 1290 5 | C579, C580 | ECEA1HSR33  | 001 120 3248 9 | (EH, XL, XA) |                |                |
| C481, C482 | ECEA1EU47    | 001 120 2840 3 | C581, C582 | ECEA16Z10   | 001 120 0699 8 | (XB)         |                |                |
| C494       | ECEA1HU010   | 001 120 2842 1 | C583, C584 | ECEA1CU470  | 001 120 2835 0 |              |                |                |

# WIRING CONNECTION DIAGRAM



**A**

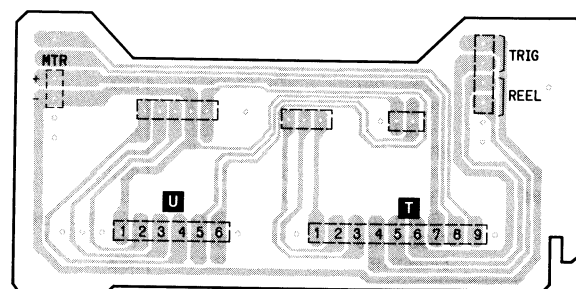
# B



## D



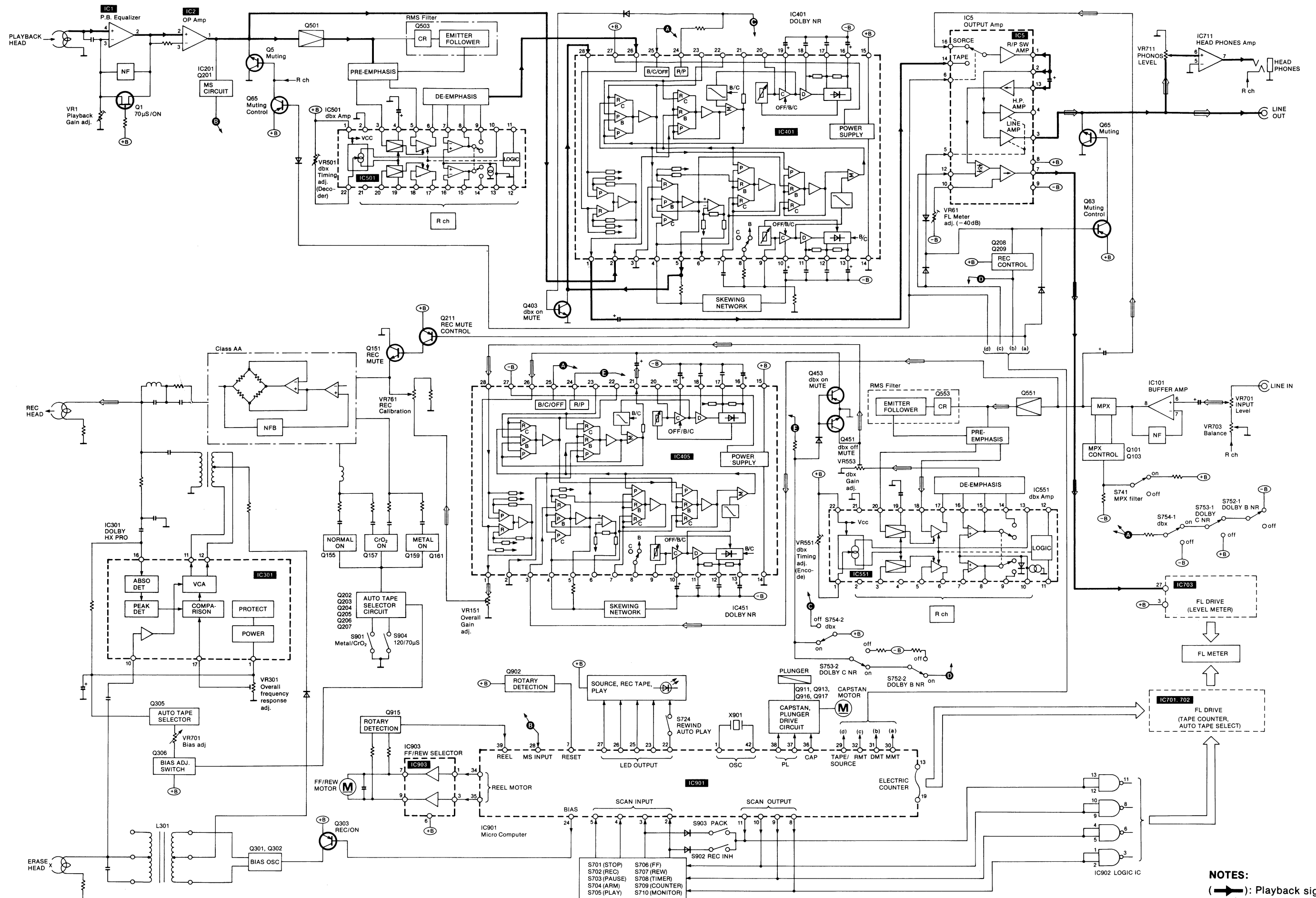
## F

 HEADPHONES P.C.B.





# BLOCK DIAGRAM



## NOTES:

- (→): Playback signal
- (⇌): Recording signal

# REPLACEMENT PARTS LIST

## Notes: \* Important safety notice:

Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

\* Bracketed indications in Ref. No. columns specify the area.

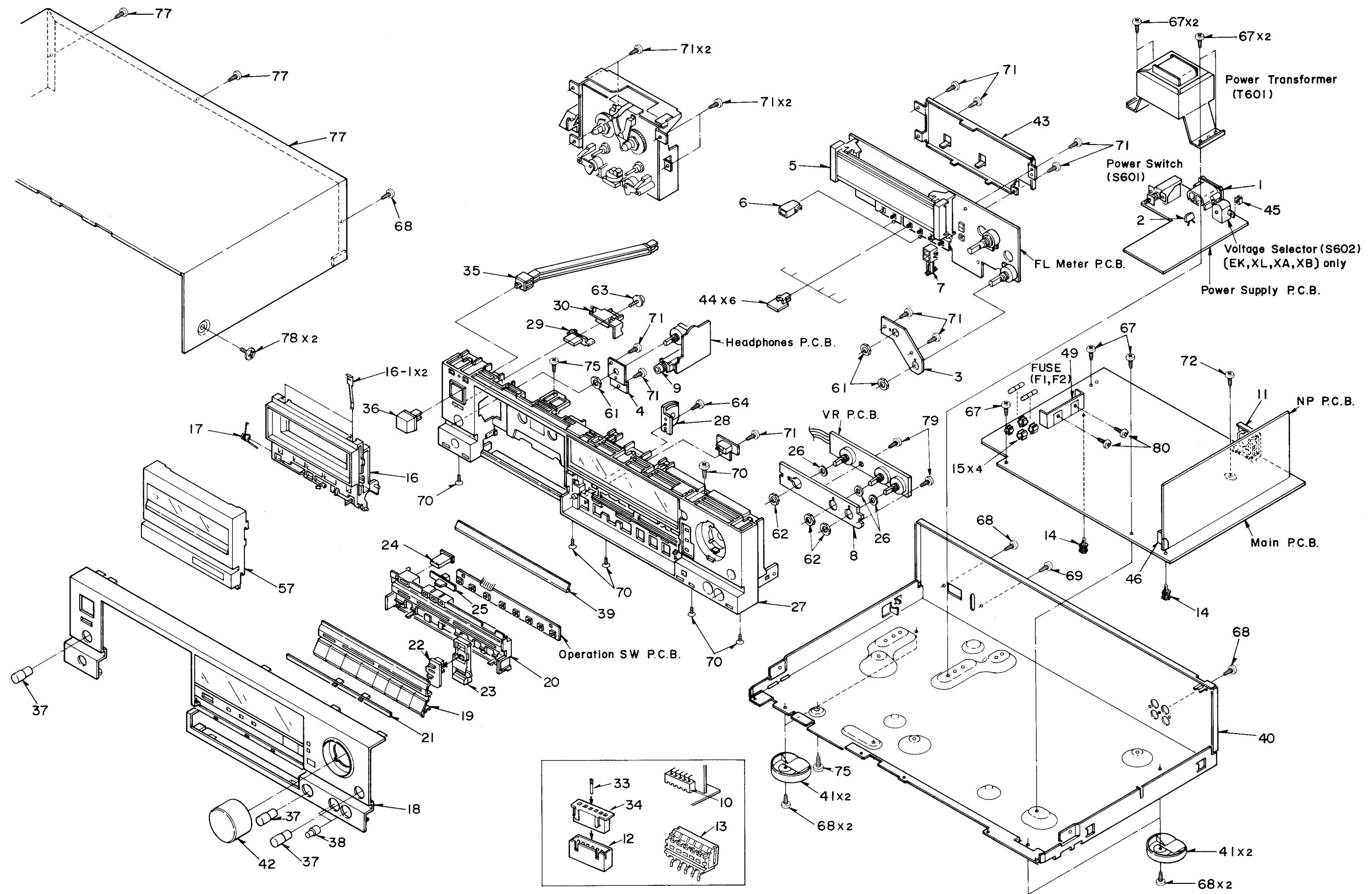
Parts without these indications can be used for all areas.

| Ref. No.            | Part No.     | Part Code      | Description          | Ref. No.               | Part No.     | Part Code      | Description             |
|---------------------|--------------|----------------|----------------------|------------------------|--------------|----------------|-------------------------|
| INTEGRATED CIRCUITS |              |                |                      | (XL, XA, XB)           |              |                |                         |
| IC1                 | AN6557F      | 001 060 7688 6 | I.C., EQUALIZER      | DIODES                 |              |                |                         |
| IC2                 | M5218L       | 001 060 3798 7 | I.C., OPERATION AMP. | D61, D63               | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC5, IC6            | AN6203       | 001 060 5005 1 | I.C., OUTPUT AMP.    | D64, D201              | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC101               | AN6557F      | 001 060 7688 6 | I.C., EQUALIZER      | D202, D203             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC151, IC152        | M5218L       | 001 060 3798 7 | I.C., OPERATION AMP. | D206, D207             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC201               | M5218L       | 001 060 3798 7 | I.C., OPERATION AMP. | D208, D209             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC301               | UPC1297CA    | 001 061 3671 6 | I.C., DOLBY HX PRO   | D211                   | MTZ6R8B      | 001 032 4068 8 | DIODE                   |
| IC401, IC402        | TEA0665      | 001 060 7933 2 | I.C., DOLBY B, C NR  | D212, D213             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC451, IC452        | TEA0665      | 001 060 7933 2 | I.C., DOLBY B, C NR  | D214, D301             | MA162A       | 001 032 0493 1 | DIODE                   |
| IC501, IC551        | AN6291       | 001 060 4112 3 | I.C., DBX AMP.       | D401, D451             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC701, IC702        | AN6280       | 001 060 3742 3 | I.C., FL DRIVE       | D501, D502             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC703               | AN6870       | 001 060 3746 9 | I.C., FL DRIVE       | D503, D551             | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC711               | M5218L       | 001 060 3798 7 | I.C., OPERATION AMP. | D552                   | 1SS133       | 001 032 3324 5 | DIODE                   |
| IC901               | LM6405G-2104 | 001 061 5238 1 | I.C., MICROCOMPUTER  | D591                   | MTZ5R1B      | 001 032 6202 2 | DIODE                   |
| IC902               | M74LS00P     | 001 060 1024 4 | I.C., LOGIC          | D601, D602 $\Delta$    | SVD1SR35200A | 001 032 3951 4 | RECTIFIER               |
| IC903               | BA621B       | 001 061 1421 0 | I.C., MOTOR DRIVE    | D603, D604 $\Delta$    | SVD1SR35200A | 001 032 3951 4 | RECTIFIER               |
| TRANSISTORS         |              |                |                      | D605 $\Delta$          | SVD1SR35200A | 001 032 3951 4 | RECTIFIER               |
| Q1, Q2              | 2SD381D      | 001 030 7411 1 | TRANSISTOR           | D607, D608             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q5, Q6              | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D611, D612             | MTZ11BT77    | 001 032 7873 5 | DIODE                   |
| Q61, Q62            | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D615, D616 $\Delta$    | SVD1SR35200A | 001 032 3951 4 | RECTIFIER               |
| Q63, Q65            | DTA114ESTP   | 001 030 5275 9 | TRANSISTOR           | D617                   | MTZ13CT77    | 001 033 0331 3 | DIODE                   |
| Q101, Q102          | 2SA1115EF    | 001 030 4055 3 | TRANSISTOR           | D701, D702             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q103, Q104          | 2SA1115EF    | 001 030 4055 3 | TRANSISTOR           | D703, D704             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q151, Q152          | 2SD1468R     | 001 030 2894 0 | TRANSISTOR           | D705, D706             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q155, Q156          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D707, D709             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q157, Q158          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D710                   | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q159, Q160          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D711                   | SLV31VC3     | 001 032 4525 4 | L.E.D                   |
| Q161, Q162          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D712                   | SLV31MC3     | 001 032 6353 8 | L.E.D                   |
| Q201                | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D713                   | SVGLB74MG3HL | 001 032 7888 8 | L.E.D                   |
| Q202, Q203          | DTA114ESTP   | 001 030 7166 5 | TRANSISTOR           | D714                   | SVGLB74VR3HL | 001 032 9300 9 | L.E.D                   |
| Q204, Q205          | DTA114ESTP   | 001 030 7166 5 | TRANSISTOR           | D751, D752             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q206, Q207          | DTA114ESTP   | 001 030 7166 5 | TRANSISTOR           | D753, D754             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q208                | 2SA1115EF    | 001 030 4055 3 | TRANSISTOR           | D901                   | MTZ5R6B      | 001 032 9506 7 | DIODE                   |
| Q209                | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D902                   | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q211                | 2SA1115EF    | 001 030 4055 3 | TRANSISTOR           | D903, D904             | MA162A       | 001 032 0493 1 | DIODE                   |
| Q301, Q302          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D909, D910             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q303                | 2SB1237TAQR  | 001 030 6929 0 | TRANSISTOR           | D911                   | MTZ5R6B      | 001 032 9506 7 | DIODE                   |
| Q305                | DTC144A      | 001 030 2708 7 | TRANSISTOR           | D912, D913             | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q306                | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | D915                   | 1SS133       | 001 032 3324 5 | DIODE                   |
| Q307                | DTC114ESTP   | 001 030 5025 5 | TRANSISTOR           | D917                   | MTZ11BT77    | 001 032 7873 5 | DIODE                   |
| Q403, Q404          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | (E, EG, EK)            |              |                |                         |
| Q451, Q452          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | (EH, XL, XA)           |              |                |                         |
| Q453, Q454          | 2SA1115EF    | 001 030 4055 3 | TRANSISTOR           | (XB)                   |              |                |                         |
| Q501, Q502          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | VARIABLE RESISTORS     |              |                |                         |
| Q503, Q504          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | VR1, VR2               | QVNB3A00B151 | 001 180 3085 4 | V.R., 150 $\Omega$ (B)  |
| Q551, Q552          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | VR61                   | EVND4AA00B23 | 001 180 2317 1 | V.R., 2K $\Omega$ (B)   |
| Q553, Q554          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | VR62                   | EVND4AA00B24 | 001 180 2244 1 | V.R., 20K $\Omega$ (B)  |
| Q601                | 2SD1762DE    | 001 030 6930 7 | TRANSISTOR           | VR151, VR152           | EVND4AA00B14 | 001 180 2242 3 | V.R., 10K $\Omega$ (B)  |
| Q602                | 2SB1185DEF   | 001 030 5691 7 | TRANSISTOR           | VR301, VR302           | EVND4AA00B24 | 001 180 2244 1 | V.R., 20K $\Omega$ (B)  |
| Q603, Q701          | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | VR501, VR551           | EVND4AA00B23 | 001 180 2317 1 | V.R., 2K $\Omega$ (B)   |
| Q901                | 2SD1225RM    | 001 030 4356 3 | TRANSISTOR           | VR553, VR554           | EVND4AA00B14 | 001 180 2242 3 | V.R., 10K $\Omega$ (B)  |
| Q902                | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | VR701, VR702           | EWK94A033A54 | 001 174 8883 8 | V.R., 50K $\Omega$ (A)  |
| Q911, Q912          | 2SB1237TAQR  | 001 030 6929 0 | TRANSISTOR           | VR703                  | EWHFDAF20G25 | 001 174 8947 9 | V.R., 200K $\Omega$ (G) |
| Q913                | 2SB1237TAQR  | 001 030 6929 0 | TRANSISTOR           | VR711, VR712           | EWCSNA020A14 | 001 174 8940 6 | V.R., 10K $\Omega$ (A)  |
| Q914                | 2SD1225RM    | 001 030 4356 3 | TRANSISTOR           | VR721                  | EVJMLAF20B23 | 001 174 9173 7 | V.R., 2K $\Omega$ (B)   |
| (M, MC)             |              |                |                      | VR761, VR762           | EVJMLA018B14 | 001 174 9176 4 | V.R., 10K $\Omega$ (B)  |
| Q914                | 2SD1762DE    | 001 030 6930 7 | TRANSISTOR           | COILS AND TRANSFORMERS |              |                |                         |
| (E, EG, EK, EH)     |              |                |                      | L101, L102             | QLB40048     | 001 210 7275 9 | COIL                    |
| (XL, XA, XB)        |              |                |                      | L151, L152             | SLQX272-1YT  | 001 211 0649 2 | CHOKE COIL              |
| Q915                | 2SC2603EFG   | 001 030 4301 8 | TRANSISTOR           | L153, L154             | SLQX303-1K   | 001 211 1756 6 | CHOKE COIL              |
| Q916                | 2SD1225RM    | 001 030 4356 3 | TRANSISTOR           | L301                   | QLB0202      | 001 210 9090 8 | COIL                    |
| (M, MC)             |              |                |                      | L303, L304             | SL09B1-K     | 001 211 3508 2 | OSCILLATOR COIL         |
| Q916                | 2SD1762DE    | 001 030 6930 7 | TRANSISTOR           | L401, L402             | SLM1B8-K     | 001 211 2731 1 | MPX COIL                |
| (E, EG, EK, EH)     |              |                |                      | L451, L452             | ELM7Q306A    | 001 210 6560 1 | COIL                    |

| Ref. No.                                                                                                                         | Part No.                                                            | Part Code                                                                              | Description                                                                                      | Ref. No.                                                                                                                                                                                         | Part No.                                                                                                                                                            | Part Code                                                                                                                                                                                                                                                | Description                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L501, L502<br>T601 $\Delta$<br>(E, EG, EH)<br>T601 $\Delta$<br>(EK, XL)<br>T601 $\Delta$<br>(XA, XB)<br>T601 $\Delta$<br>(M, MC) | SLQX272-1YT<br>SLT5L279-W<br>SLT5L280-W<br>SLT5L281-W<br>SLT5L282-W | 001 211 0649 2<br>001 202 9096 8<br>001 202 9097 7<br>001 202 9098 6<br>001 202 9099 5 | CHOKE COIL<br>POWER TRANSFORMER<br>POWER TRANSFORMER<br>POWER TRANSFORMER<br>POWER TRANSFORMER   | F1, F2 $\Delta$<br>(E, EG, EK, EH)<br>(XL, XA, XB)                                                                                                                                               | XBA2C10TB0                                                                                                                                                          | 002 380 1351 1                                                                                                                                                                                                                                           | 250V, T1A                                                                                                                                                                                                                         |
| COMPONENT COMBINATIONS                                                                                                           |                                                                     |                                                                                        |                                                                                                  | SWITCHES                                                                                                                                                                                         |                                                                                                                                                                     |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |
| Z901<br>Z902<br>Z903<br>Z904                                                                                                     | EXBF5E103J8R<br>EXBF5E472J8R<br>EXBF8E472J8R<br>EXBF5E472J8R        | 001 230 2886 6<br>001 230 2223 9<br>001 230 2622 8<br>001 230 2223 9                   | COMPONENT COMBINATION<br>COMPONENT COMBINATION<br>COMPONENT COMBINATION<br>COMPONENT COMBINATION | S601 $\Delta$<br>S602 $\Delta$<br>(EK, XL, XA)<br>(XB)<br>S701, S702<br>S703, S704<br>S705, S706<br>S707<br>S708<br>S709, S710<br>S741, S742<br>S752, S753<br>S754<br>S901<br>S902, S903<br>S904 | ESB8249V<br>SSR227<br>EVQQAC05G<br>EVQQAC05G<br>EVQQAC05G<br>EVQQAC05G<br>QSS1306<br>EVQQAC05G<br>SSH2121<br>SSH4108<br>SSH4108<br>SMQA1059<br>SMQA1058<br>SMQA1059 | 003 435 5877 0<br>003 430 2365 6<br>003 439 2072 1<br>003 439 2072 1<br>003 439 2072 1<br>003 439 2072 1<br>003 431 2419 4<br>003 439 2072 1<br>003 435 5841 2<br>003 435 6138 4<br>003 435 6138 4<br>003 435 6132 0<br>003 435 6131 1<br>003 435 6132 0 | POWER SWITCH<br>VOLTAGE SELECTOR<br>SW, OPERATION<br>SW, OPERATION<br>SW, OPERATION<br>SW, OPERATION<br>SW, TIMER<br>SW, COUNTER RESET/MONITOR<br>SW, MPX SEL.<br>SW, NR SEL.<br>SW, NR SEL.<br>SW, DET.<br>SW, DET.<br>SW, METAL |
| OSCILLATORS                                                                                                                      |                                                                     |                                                                                        |                                                                                                  |                                                                                                                                                                                                  |                                                                                                                                                                     |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |
| X901                                                                                                                             | SVFKBR800H-K                                                        | 001 241 1414 7                                                                         | QUARTZ OSCILLATOR                                                                                |                                                                                                                                                                                                  |                                                                                                                                                                     |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |
| DISPLAYS                                                                                                                         |                                                                     |                                                                                        |                                                                                                  |                                                                                                                                                                                                  |                                                                                                                                                                     |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |
| FL1                                                                                                                              | SADBG404ZK                                                          | 001 001 0474 7                                                                         | DISPLAY                                                                                          |                                                                                                                                                                                                  |                                                                                                                                                                     |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |
| FUSES                                                                                                                            |                                                                     |                                                                                        |                                                                                                  |                                                                                                                                                                                                  |                                                                                                                                                                     |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                   |

| Ref. No.                                                                                                                                                                                                                                                                                                                                                                 | Part No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Part Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ref. No.                                                                                                                                                                                                                                                                                                                                                 | Part No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Part Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Description                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CABINET AND CHASSIS                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1 $\Delta$<br>(XL)<br>1 $\Delta$<br>(M, MC, E, EG)<br>(EK, EH, XA)<br>(XB)<br>2<br>(E, EG, EK, EH)<br>(XL, XA, XB)<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>12<br>13<br>13<br>13<br>13<br>13<br>13<br>14<br>15<br>(E, EG, EK, EH)<br>(XL, XA, XB)<br>16<br>16-1<br>17<br>18<br>19<br>20<br>21<br>22<br>23<br>24<br>25<br>26<br>27<br>28<br>29<br>30<br>33 | SJSD16<br>SJS9236<br>SMX897<br>SMNM11<br>SMNM13<br>SHRM9020<br>SMPSB905-KE<br>SHRM9023<br>SMNM14<br>QJA0455ZC<br>SJT30539MB<br>SJF3057N<br>SJT3415<br>SJT3611<br>SJT30243-V<br>SJT30340LX-V<br>SJT30440LX-V<br>SJT30540LX-V<br>SJT30640LX-V<br>SJT30740LX-V<br>SJT30840LX-V<br>SHR9762<br>QTF1054<br>SGXSB80R-KAN<br>QBP2006A<br>SUSM12<br>SGWSB905-KE<br>SBCM100<br>SHRSB905-KM<br>SGUM312T1A<br>SGUM32ZT0A<br>SBCM80ZK0A<br>SBCM20ZK0A<br>SBDM20ZK0A<br>SHMM60H70<br>SGYSB905-KE<br>QYF0627A<br>SBCM50ZK0A<br>SMQM30016<br>SJT783 | 003 400 7436 6<br>003 403 4660 7<br>016 600 0483 0<br>016 632 1852 3<br>016 632 1853 2<br>016 652 0721 5<br>016 652 0829 4<br>016 632 1916 4<br>003 400 5218 2<br>003 410 6148 9<br>003 410 3829 3<br>003 403 3909 5<br>003 410 6000 8<br>003 410 6222 6<br>003 410 6075 9<br>003 410 6076 8<br>003 410 5996 1<br>003 410 6149 8<br>003 410 5990 7<br>003 410 5998 9<br>016 652 0497 4<br>003 415 0168 4<br>016 846 3666 5<br>015 727 0706 8<br>016 726 0913 0<br>016 652 0876 7<br>016 842 1651 0<br>016 842 1652 9<br>016 702 7105 8<br>016 702 6902 1<br>016 700 1950 3<br>016 643 1084 8<br>015 641 0945 0<br>016 702 6899 9<br>016 718 3366 9<br>003 410 6001 7 | AC INLET<br>AC INLET<br>SHIELD COVER<br>BRACKET<br>BRACKET<br>FL HOLDER<br>L.E.D. BLOCK<br>L.E.D. HOLDER<br>BRACKET<br>HEADPHONES JACK<br>LUG TERMINAL<br>TERMINAL BOARD<br>CONNECTOR(4-P)<br>CONNECTOR(6-P)<br>CONNECTOR(2-P)<br>CONNECTOR(3-P)<br>CONNECTOR(4-P)<br>CONNECTOR(5-P)<br>CONNECTOR(6-P)<br>CONNECTOR(7-P)<br>CONNECTOR(8-P)<br>SPACER<br>FUSE HOLDER<br>CASSETTE HOLDER<br>SPRING<br>SPRING<br>FRONT PANEL<br>BUTTON, OPERATION<br>BUTTON GUIDE<br>INDICATOR<br>INDICATOR<br>BUTTON, MONITOR<br>BUTTON, RESET<br>KNOB, TIMER<br>SPACER<br>FRONT GRILLE<br>DAMPER GEAR<br>BUTTON, EJECT<br>LEVER<br>CONTACT | 34<br>34<br>35<br>36<br>37<br>38<br>39<br>40<br>(E, EG)<br>40<br>(M, MC)<br>40<br>(EK, XL, XA)<br>(XB)<br>40<br>(EG, EH)<br>40<br>(XL)<br>40<br>(XA, XB)<br>41<br>42<br>43<br>44<br>45<br>(EK, XL, XA)<br>(XB)<br>46<br>49<br>50<br>51<br>61<br>62<br>63<br>64<br>67<br>68<br>69<br>(EK, XL, XA)<br>(XB)<br>70<br>71<br>72<br>75<br>77<br>78<br>79<br>80 | SJS5421<br>SJS5629<br>SUBM14<br>SBC666-5<br>SBDM10ZK0A<br>SBN1185-2<br>SGXM46<br>SGPM10ZF1B<br>SGPM10ZF1C<br>SGPM10ZF2A<br>SGPSB905-KG<br>SGPSB905-KL<br>SGPSB905-KX<br>SKLD5<br>SYTM10ZC0A<br>SMNM10-1<br>SBCM30ZK0A<br>SMNM15<br>SME103-5<br>SMY890<br>SKC1850K391<br>SYKM38<br>XNS8FZ<br>XNS7<br>SFXGQ06N01<br>XTV3+10BFN<br>XTV3+6FR<br>XTB3+8JFZ<br>XTB3+12JFZ<br>XTS3+8JFZ<br>XTV3+10JR<br>XTBS3+8JFZ1<br>XTB3+6JR<br>XTB3+8JFZ<br>SNE2118-1<br>XTS3+12JR<br>XYN3+FB | 003 400 1643 5<br>003 400 5917 2<br>016 712 0347 4<br>016 702 6679 9<br>016 700 1952 1<br>016 700 1614 6<br>016 846 3664 7<br>016 632 1917 3<br>016 828 0321 1<br>016 700 1989 8<br>016 632 1915 5<br>016 702 6901 2<br>016 632 1917 3<br>016 601 0461 1<br>016 611 0015 3<br>016 800 2466 9<br>005 507 0573 8<br>005 507 1202 8<br>005 500 4983 3<br>005 501 0818 6<br>005 501 1321 2<br>005 501 0138 3<br>005 501 2078 0<br>005 501 2270 2<br>005 501 1142 3<br>005 501 2523 0<br>005 501 4755 8<br>005 501 0138 3<br>005 500 5004 1<br>005 503 0513 0 | CONNECTOR(4-P)<br>CONNECTOR(6-P)<br>ROD<br>BUTTON, POWER<br>KNOB<br>KNOB<br>ORNAMENT<br>CHASSIS<br>CHASSIS<br>CHASSIS<br>CHASSIS<br>CHASSIS<br>CHASSIS<br>INSULATOR<br>DIAL, REC LEVEL<br>COVER<br>BUTTON<br>BRACKET<br>MAGNETIC SHIELD PARTS<br>HEATSINK<br>CABINET<br>CASSETTE LID<br>NUT<br>NUT<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW<br>SCREW |
|                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SCREWS, WASHERS & NUTS                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                         |

# ■ CABINET PARTS LOCATION



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Note:

- S601 : Power switch in "off" position.
- S602 : Voltage selector switch in "240V" position.  
(EK, XA, (110V — 127V — 220V — 240V) XB, XL)
- S701 : Stop switch in "off" position.
- S702 : Record switch in "off" position.
- S703 : Pause switch in "off" position.
- S704 : Record-muting switch in "off" position.
- S705 : Play switch in "off" position.
- S706 : Fast-forward mode switch in "off" position.
- S707 : Rewind switch in "off" position.
- S708 : Timer stand-by switch in "off" position.  
(rec — off — play)
- S709 : Counter reset switch in "off" position.
- S710 : Monitor switch in "off" position.
- S741 : Multiplex filter switch in "off" position.
- S742 : Repeat-play switch in "off" position.
- S752 : Noise-reduction DOLBY B mode switch in "off" position.
- S753 : Noise-reduction DOLBY C mode switch in "off" position.
- S754 : Noise-reduction dbx mode switch in "off" position.
- S901 : Metal/CrO<sub>2</sub> switch in "off (Metal)" position.
- S902 : Rec INH switch in "off" position.
- S903 : Pack switch in "off" position.
- S904 : 70μ/120μs selector switch in "off (70μs)" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.  
1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.  
( )...Voltage values at record mode.
- (—) indicates B (bias).
- (→) indicates the flow of the playback signal.
- (→) indicates the flow of the record signal.
- Important safety notice

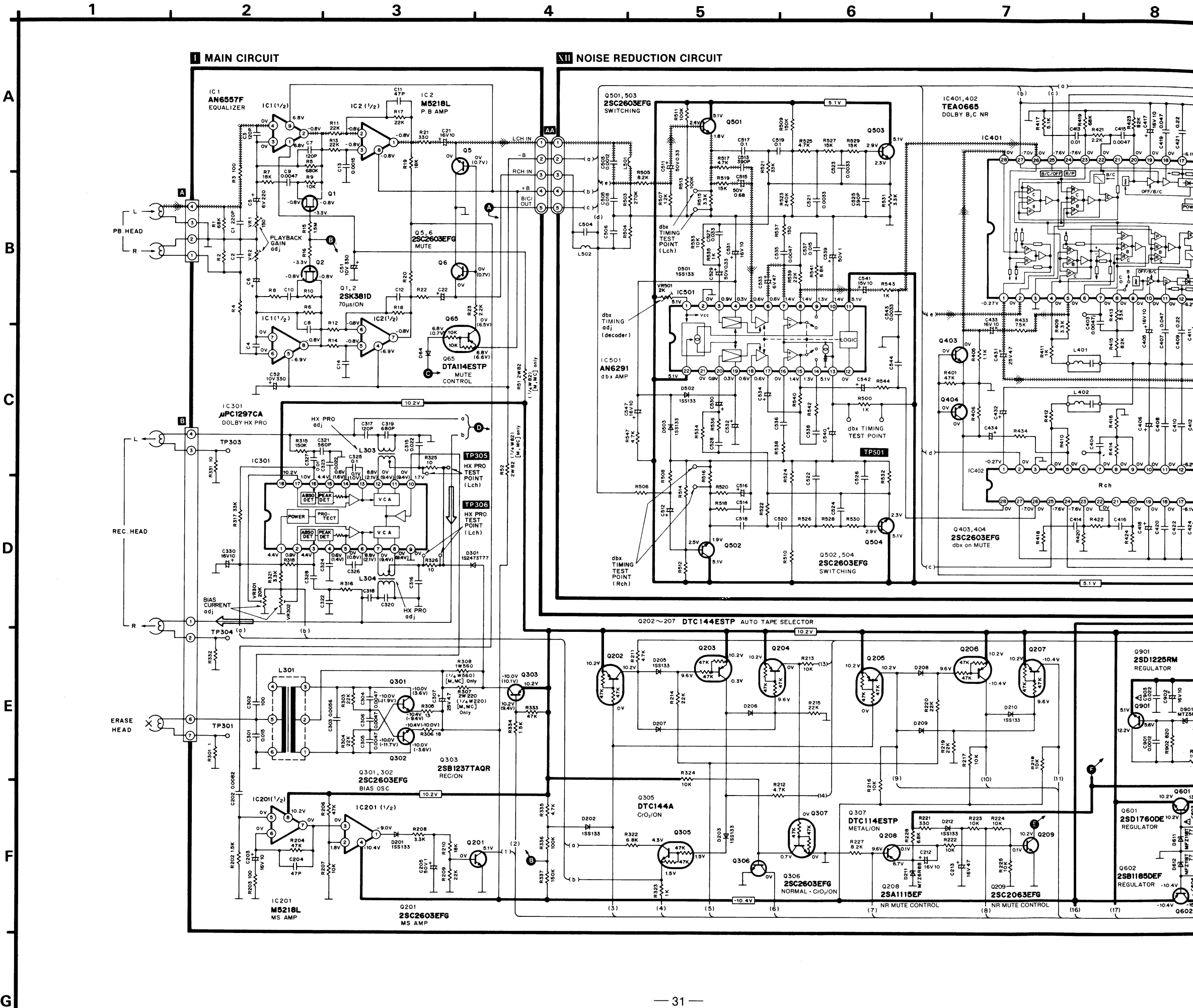
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

\* Caution!

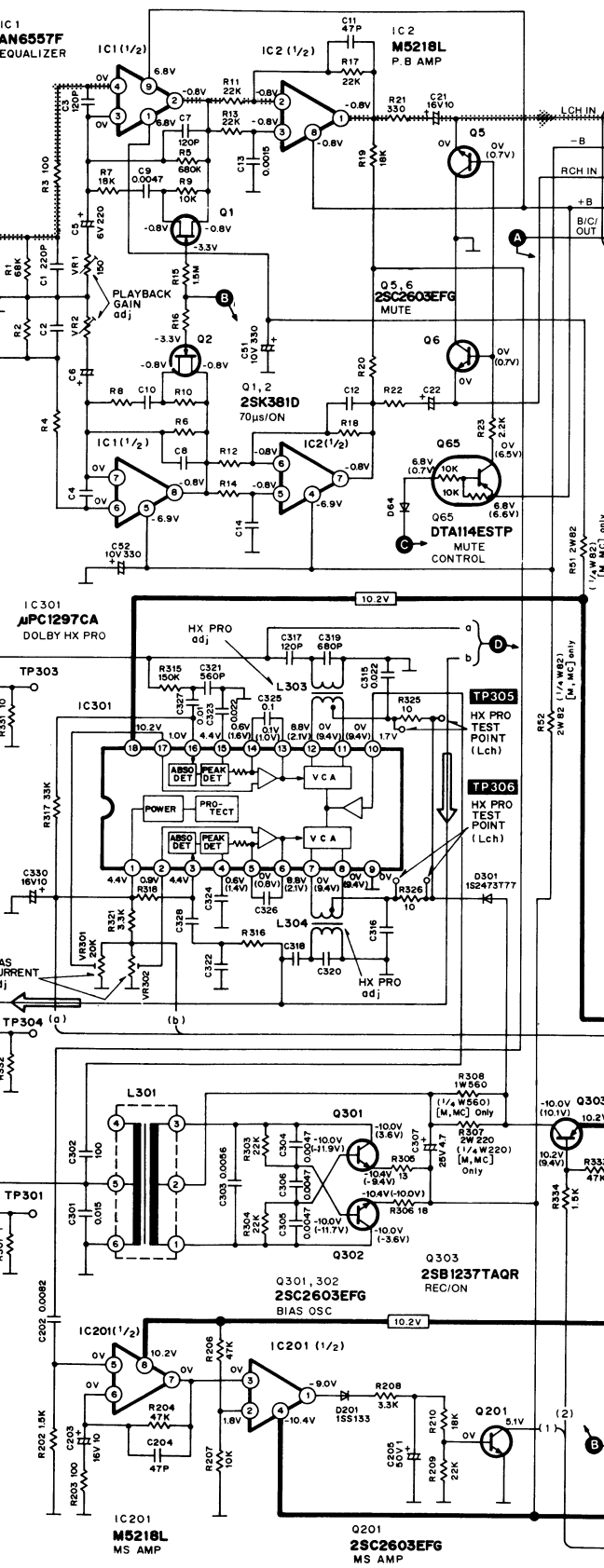
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- \* Cover the parts boxes made of plastics with aluminum foil.
- \* Ground the soldering iron.
- \* Put a conductive mat on the work table.
- \* Do not touch the legs of IC or LSI with the fingers directly.

SPECIFICATIONS \*Input level control...MAX

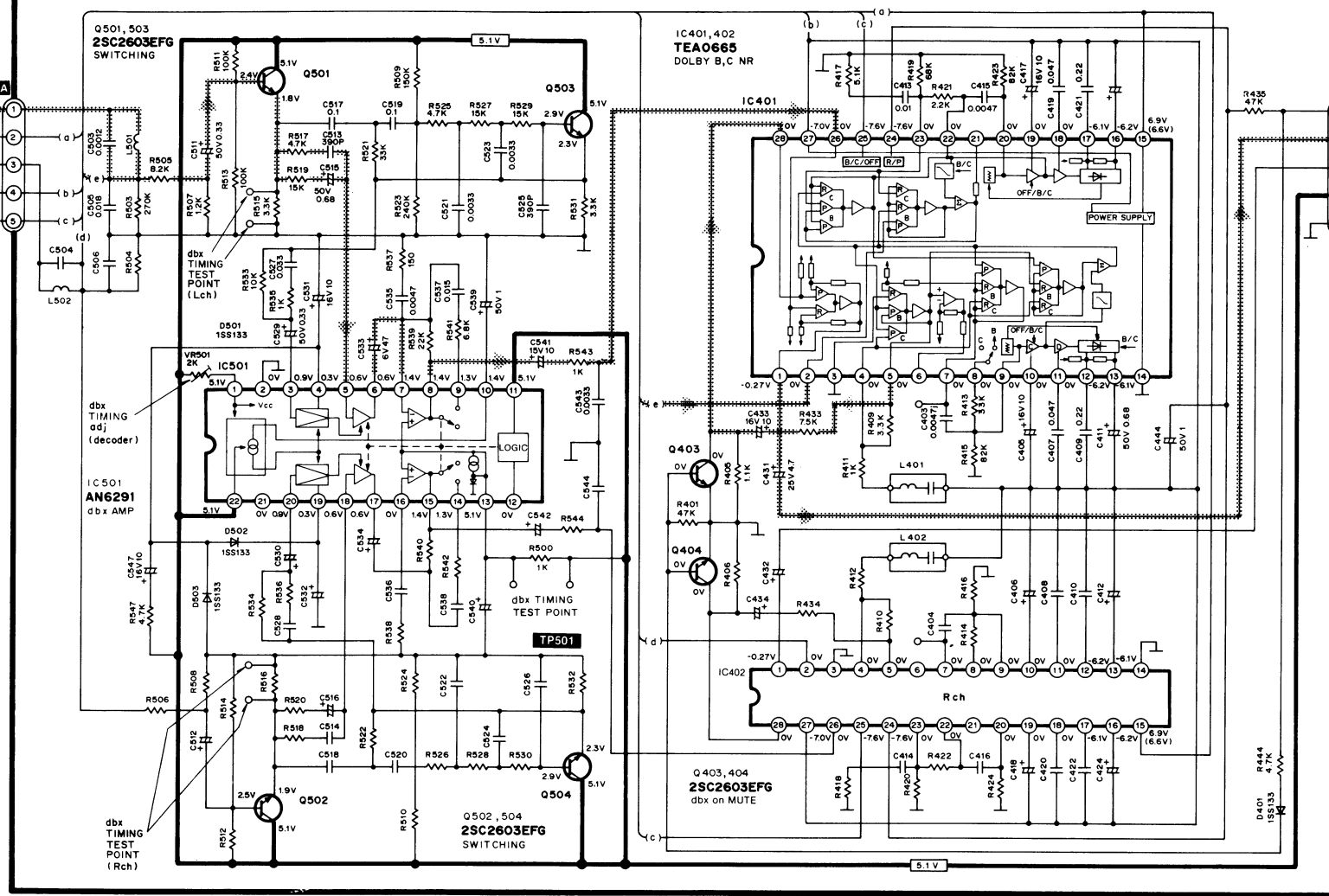
|                                                                                                                   |                                           |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Playback S/N ratio<br>*Test tape...QZZCFM                                                                         | Greater than 45dB                         |
| Overall distortion<br>*Test tape<br>...QZZCRA for Normal<br>...QZZCRX for CrO <sub>2</sub><br>...QZZCRZ for Metal | Less than 4%                              |
| Overall S/N ratio<br>*Test tape ...QZZCRA                                                                         | Greater than 43dB<br>(without NAB filter) |



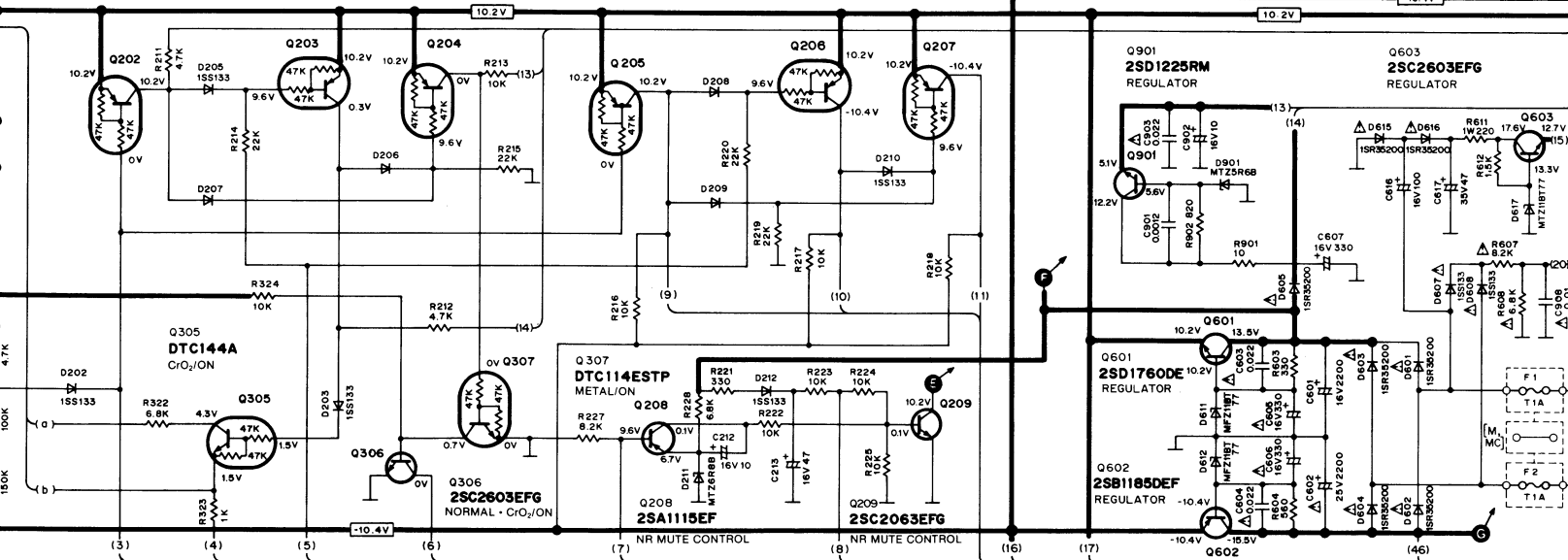
## MAIN CIRCUIT



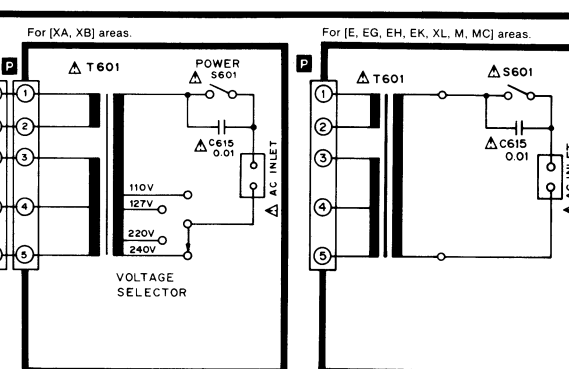
## VII NOISE REDUCTION CIRCUIT



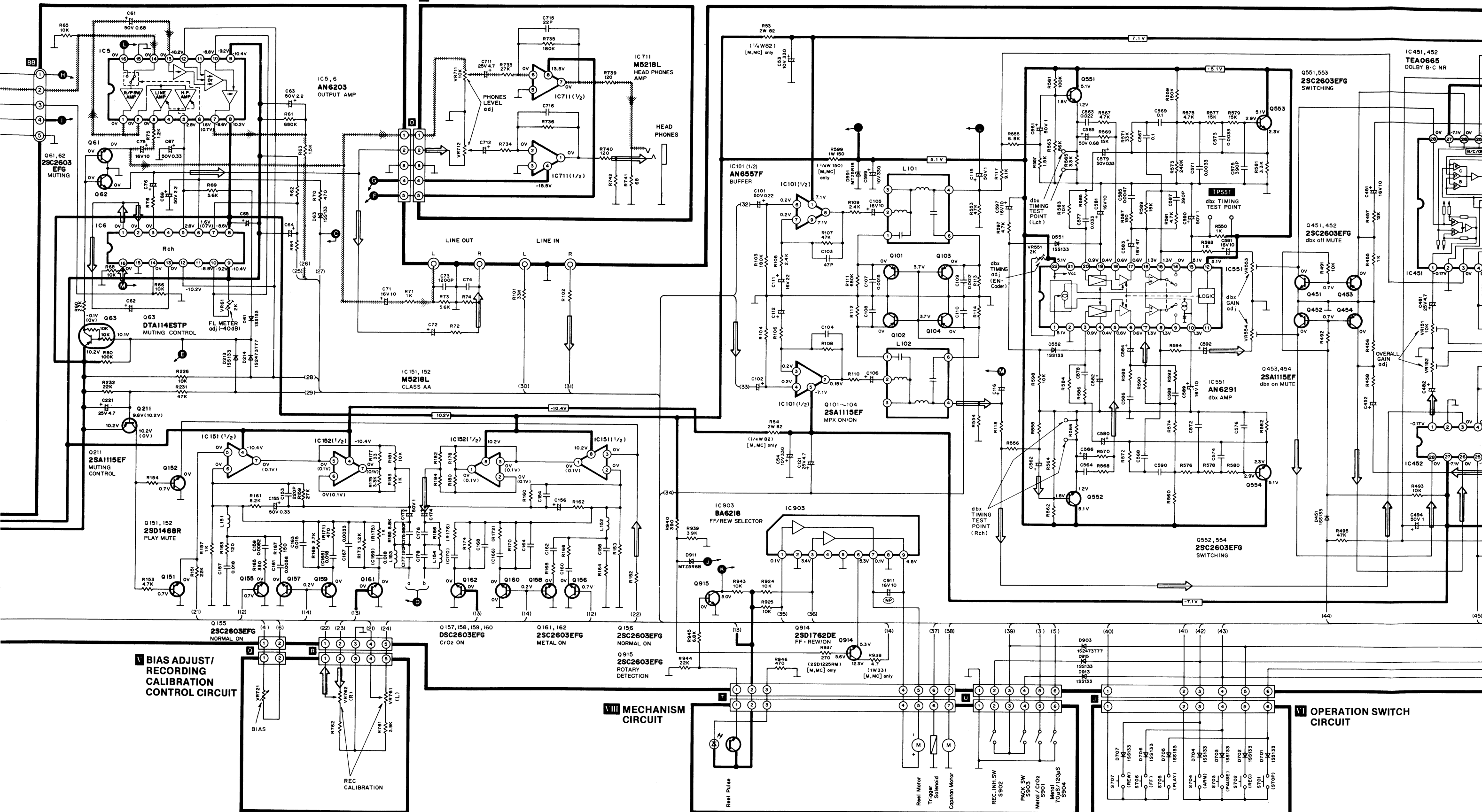
## Q202~207 DTC144ESTP AUTO TAPE SELECTOR

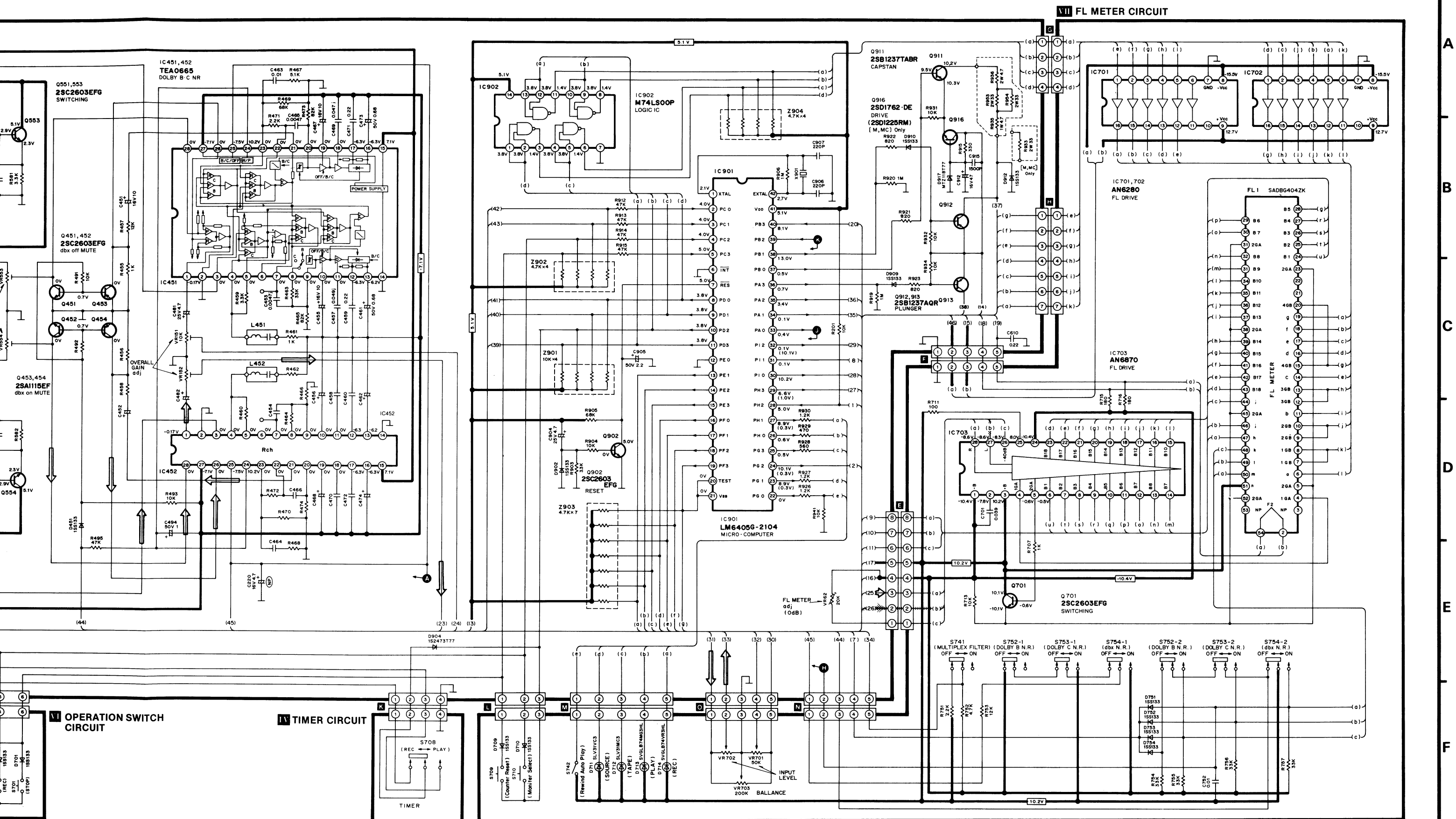


## III POWER SUPPLY CIRCUIT



## III HEADPHONES CIRCUIT



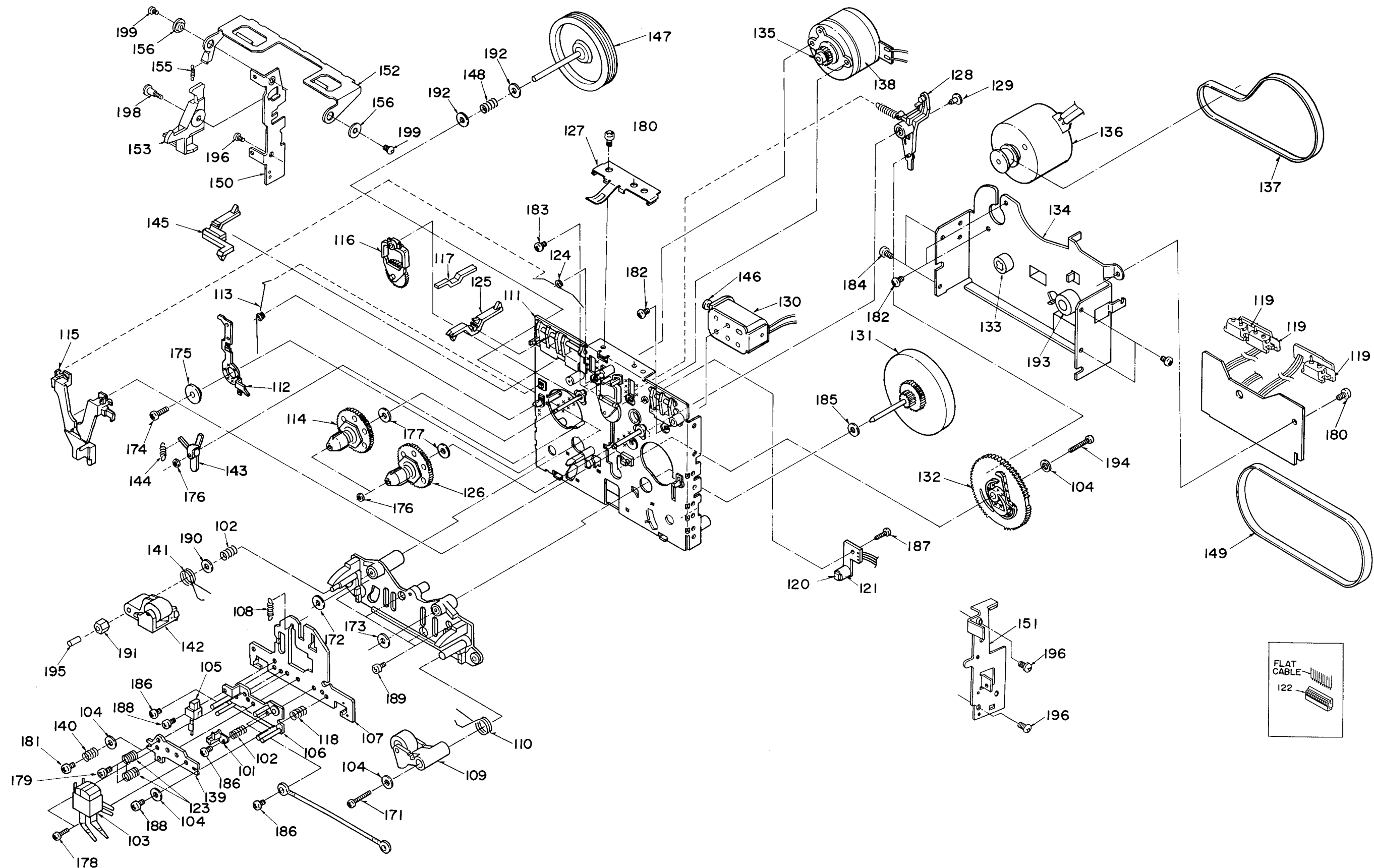


# REPLACEMENT PARTS LIST

| Ref. No.      | Part No.     | Part Code      | Description               | Ref. No.               | Part No.   | Part Code      | Description        |
|---------------|--------------|----------------|---------------------------|------------------------|------------|----------------|--------------------|
| CASSETTE DECK |              |                |                           | 140                    | SMQA1177   | 016 726 1013 3 | AZIMUTH SPRING (L) |
| CASSETTE DECK |              |                |                           | 141                    | SMQA1207   | 016 740 0129 4 | SPRING             |
| 101           | SMQA1190     | 016 641 0261 3 | TAPE GUIDE                | 142                    | SMQA1208   | 016 740 0128 5 | ROLLER             |
| 102           | SMQA1191     | 016 726 1019 7 | SPRING                    | 143                    | SMQA1210   | 016 717 0281 0 | ARM                |
| 103           | SJH104       | 001 270 1869 7 | MAGNETIC HEAD             | 144                    | SMQA1211   | 016 726 1018 8 | SPRING             |
| 104           | SMQA1161     | 016 643 1069 7 | WASHER                    | 145                    | SMQA1069   | 016 718 3359 8 | DET. LEVER         |
| 105           | SMQA1192     | 001 270 1872 2 | E.HEAD                    | 146                    | SMQA1212   | 003 455 0413 6 | PLUNGER CAP        |
| 106           | SMQA1193     | 016 630 1863 0 | SPACER                    | 147                    | SMQA1213   | 016 756 0090 6 | WHEEL              |
| 107           | SMQA1194     | 016 630 1861 2 | BASE                      | 148                    | SMQA1215   | 016 726 1017 9 | SPRING             |
| 108           | SMQA1004     | 016 726 0826 8 | SPRING                    | 149                    | SMQA1218   | 016 754 0073 7 | ANGULAR BELT       |
| 109           | SMQA1005     | 016 740 0114 1 | ROLLER                    | 150                    | SMNM8A     | 016 632 1914 6 | BRACKET            |
| 110           | SMQA1006     | 016 726 0825 9 | SPRING                    | 151                    | SMNM16     | 016 632 1930 6 | BRACKET            |
| 111           | SMQA1196     | 016 630 1860 3 | MECHANISM CHASSIS         | 152                    | SMQA1042   | 016 718 3369 6 | LEVER              |
| 112           | SMQA1199     | 016 717 0282 9 | LEVER                     | 153                    | SMQM30015A | 016 718 3400 4 | LEVER, EJECT       |
| 113           | SMQA1012     | 016 726 0835 7 | SPRING                    | 155                    | QBT1936M   | 016 726 0914 9 | SPRING             |
| 114           | SMQA1200     | 016 765 0059 4 | REEL TABLE                | 156                    | SUXM5      | 016 634 0141 1 | SPACER             |
| 115           | SMQA1015     | 016 718 3350 7 | BRAKE LEVER               | SCREWS, WASHERS & NUTS |            |                |                    |
| 116           | SMQA1061     | 016 742 0039 5 | IDLER PULLEY              | 171                    | XSN2+4     | 005 500 1283 6 | SCREW              |
| 117           | SMQA1166     | 016 718 3407 7 | DET. LEVER                | 172                    | SMQA1195   | 016 643 1074 0 | WASHER             |
| 118           | SMQA1170     | 016 726 1014 2 | AZIMUTH SPRING (R)        | 173                    | SMQA1007   | 016 862 1041 8 | WASHER             |
| 119           | SMQA1021     | 016 643 0965 8 | SPACER                    | 174                    | SMQA1197   | 016 713 0424 3 | SCREW              |
| 120           | SMQA1041     | 001 035 0392 0 | PHOTO ELECTRIC TRANSDUCER | 175                    | SMQA1198   | 016 643 1073 1 | WASHER             |
| 121           | SMQA1022     | 016 643 0964 9 | SPACER                    | 176                    | SMQA1010   | 016 765 0056 7 | WASHER             |
| 122           | SJT30243-V   | 003 410 6222 6 | CONNECTOR(2-P)            | 177                    | SMQA1014   | 016 641 0246 2 | WASHER             |
| 122           | SJT30440LX-V | 003 410 6076 8 | CONNECTOR(4-P)            | 178                    | SMQA1167   | 016 713 0418 1 | SCREW              |
| 122           | SJT30640LX-V | 003 410 6149 8 | CONNECTOR(6-P)            | 179                    | SMQA1168   | 016 713 0417 2 | SCREW              |
| 122           | SJT30740LX-V | 003 410 5990 7 | CONNECTOR(7-P)            | 180                    | XTN3+4     | 005 501 4864 4 | SCREW              |
| 123           | SMQA1172     | 016 726 1012 4 | SPRING                    | 181                    | SMQA1169   | 016 713 0419 0 | SCREW              |
| 124           | SMQA1024     | 016 726 0834 8 | SPRING                    | 182                    | XYN26+C3   | 005 503 0738 5 | SCREW              |
| 125           | SMQA1025     | 016 718 3349 0 | DET. LEVER                | 183                    | XYN26+C6   | 005 503 0654 1 | SCREW              |
| 126           | SMQA1026     | 016 913 0003 6 | REEL                      | 184                    | XSN26+4    | 005 500 1357 5 | SCREW              |
| 127           | SMQA1062     | 016 726 0881 1 | SPRING                    | 185                    | SMQA1201   | 016 643 1072 2 | WASHER             |
| 128           | SMQA1171     | 016 717 0280 1 | PLAY ARM                  | 186                    | SMQA1175   | 016 713 0420 7 | SCREW              |
| 129           | SMQA1029     | 016 640 0459 6 | CAP                       | 187                    | XTN2+6     | 005 501 3949 4 | SCREW              |
| 130           | SMQA1070     | 003 454 0638 6 | PLUNGER                   | 188                    | XSN2+8     | 005 500 1301 1 | SCREW              |
| 131           | SMQA1202     | 016 756 0091 5 | WHEEL                     | 189                    | SMQA1207   | 016 740 0129 4 | SPRING             |
| 132           | SMQA1203     | 016 745 0261 6 | CAM GEAR                  | 190                    | SMQA1201   | 016 643 1072 2 | WASHER             |
| 133           | SMQA1097     | 016 643 1004 4 | SPACER                    | 191                    | SMQA1209   | 016 740 0127 6 | NUT                |
| 134           | SMQA1204     | 016 650 5410 7 | BRACKET                   | 192                    | SMQA1214   | 016 643 1071 3 | WASHER             |
| 135           | SMQA1036     | 002 310 2270 9 | DC MOTOR                  | 193                    | SMQA1216   | 016 713 0423 4 | SCREW              |
| 136           | SMQA1205     | 002 310 2587 1 | DC MOTOR                  | 194                    | SMQA1217   | 016 713 0422 5 | SCREW              |
| 137           | SMQA1206     | 016 754 0074 6 | ANGULAR BELT              | 195                    | SMQA1219   | 016 713 0421 6 | SCREW              |
| 138           | SMQA1179     | 016 601 0647 3 | SHIELD PLATE              | 196                    | XTN3+5F    | 005 501 3502 1 | SCREW              |
| 139           | SMQA1176     | 016 630 1859 6 | HEAD PLATE                | 198                    | SMQA1017   | 005 500 6211 2 | SCREW              |
|               |              |                |                           | 199                    | XTV3+6F    | 005 501 0891 7 | SCREW              |

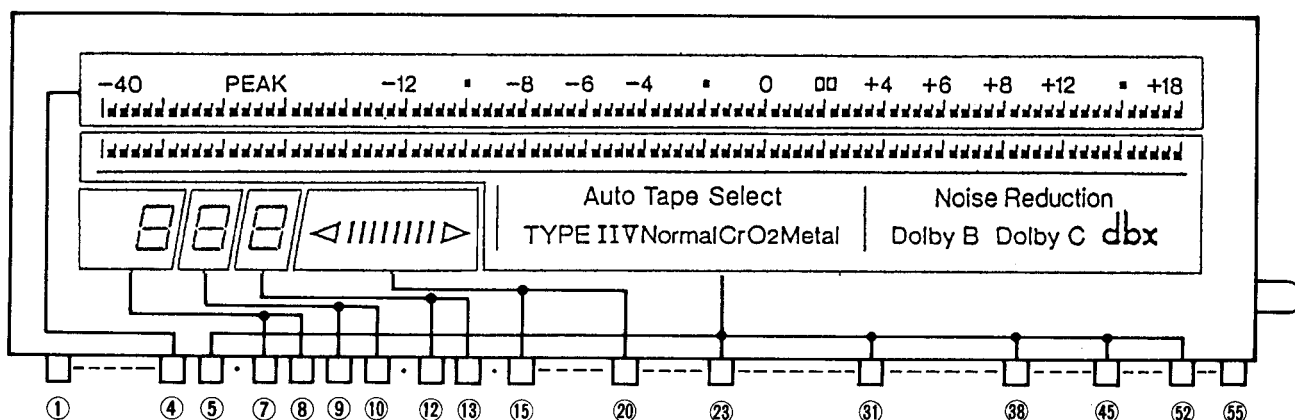
| Ref. No.        | Part No.    | Part Code      | Description      | Ref. No.        | Part No. | Part Code      | Description        |
|-----------------|-------------|----------------|------------------|-----------------|----------|----------------|--------------------|
| PACKINGS        |             |                |                  | (M, MC)         |          |                |                    |
| P1              | SPGM94      |                | CARTON BOX       | A2 Δ            | SJA168-1 | 003 490 4122 9 | POWER CORD         |
| (MC, E, EG, EK) |             |                |                  | (XA)            |          |                |                    |
| (EH, XL)        |             |                |                  | A2 Δ            | SJA173   | 003 490 4161 2 | POWER CORD         |
| P1              | SPGM96      |                | CARTON BOX       | (XL)            |          |                |                    |
| (M)             |             |                |                  | A2 Δ            | SJA183   | 003 490 4873 7 | POWER CORD         |
| P1              | SPGM98      | 016 971 5111 7 | CARTON BOX       | (XB)            |          |                |                    |
| (XA, XB)        |             |                |                  | A3 Δ            | SJP9215  | 003 402 1437 9 | AC PLUG ADAPTOR    |
| P2              | SPSM17      | 016 977 3179 5 | PAD              | (XA, XB)        |          |                |                    |
| P3              | SPSM18      | 016 977 3178 6 | PAD              | A4              | SQFM66   | 016 983 5310 6 | INSTRUCTION MANUAL |
| P5              | SPSM19      | 016 977 3189 3 | PAD              | (E, EK, EH, XL) |          |                |                    |
| P6              | XZB40X60A02 | 016 978 0254 8 | PROTECTION COVER | (XA)            |          |                |                    |
| ACCESSORIES     |             |                |                  | A4              | SQFM67   | 016 983 5308 0 | INSTRUCTION MANUAL |
| A1              | SJP2264     | 003 492 5035 3 | OUTPUT CORD      | (EG)            |          |                |                    |
| A2 Δ            | SFDAC05E03  | 003 490 4809 5 | POWER CORD       | A4              | SQFM69   | 016 983 5309 9 | INSTRUCTION MANUAL |
| (E, EG, EH)     |             |                |                  | (M)             |          |                |                    |
| A2 Δ            | SFDAC05G02  | 003 490 2613 3 | POWER CORD       | A4              | SQFM70   | 016 983 5307 1 | INSTRUCTION MANUAL |
| (EK)            |             |                |                  | (MC)            |          |                |                    |
| A2 Δ            | SJA166      | 003 490 4157 8 | POWER CORD       | A4              | SQFM72   | 016 983 5311 5 | INSTRUCTION MANUAL |
|                 |             |                |                  | (XB)            |          |                |                    |

# MECHANICAL PARTS LOCATION

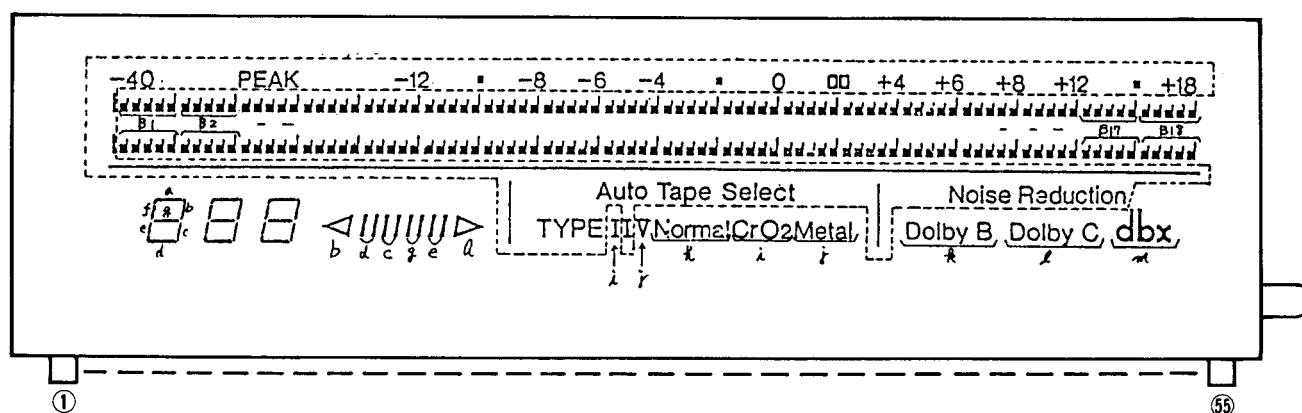


## DESCRIPTION OF FL PANEL

### • COMMON



### • SEGMENT



### • PIN CONNECTION

| PIN NO.    | 1 | 2 | 3  | 4  | 5  | 6 | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|------------|---|---|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| CONNECTION | F | F | NP | 1G | 2G | a | 1G | 1G | 2G | 2G | b  | 3G | 3G | c  | 4G | d  | e  | f  | g  | 4G | NP | NP | 2G | B  | B  | B  | B  | B  |
|            | 1 | 1 |    | A  | A  |   | B  | B  | B  | B  |    | B  | B  |    | B  |    |    |    |    | B  |    |    | A  | 1  | 2  | 3  | 4  | 5  |

| PIN NO.    | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 |
|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| CONNECTION | B  | B  | 2G | B  | B  | B  | B  | B  | B  | 2G | B  | B  | B  | B  | B  | j  | 2G | i  | h  | k  | l  | m  | n  | 2G | NP | F  | F  |
|            | 6  | 7  | A  | 8  | 9  | 10 | 11 | 12 | 13 | A  | 14 | 15 | 16 | 17 | 18 |    | A  |    |    |    |    |    | A  |    | 2  | 2  |    |

# dbx/ Closed Loop Dual Capstan DOUBLE DOLBY SYSTEM

## DEUTSCH

Verwenden Sie bitte diese Broschüre Zusammen  
mit der Service-Anleitung für das Modell Nr.  
RS-B905

### ■ MESSUNGEN UND EINSTELL METHODEN

#### Meßinstrumente

- Elektronisches Voltmeter(EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

#### Tonkopf-Azimuteinstellung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8 kHz, -20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajoscghe wellenfigur sich, wie abgebildet, 0 Grad nähert.

#### Anmerkung:

When L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2. Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

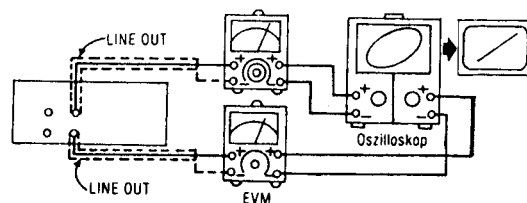


Abb. 1

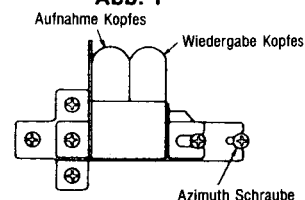


Abb. 2

#### Bandgeschwindigkeitseinstellung

1. Spielen Sie den Mittelteil des Testbands (QZZCWAT) ab.
2. Stellen Sie den VR im Motor (Siehe Abb. 3) so ein, daß die Abgabe den Normwert erfüllt.

Normwert: 3000 + 15, -10Hz

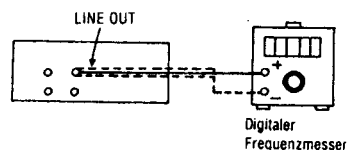


Abb. 3

#### Einstellung der Wiedergabeverstärkungsregelung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315 Hz, 0 dB) ab.
2. Stellen Sie VR1 (L-K) und VR2 (R-K) so ein, daß die Abgabe den Normwert erfüllt.

Normwert: 0.4V ± 0.5dB

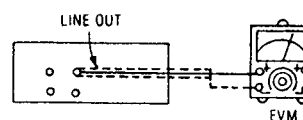


Abb. 4

## Wiedergabefrequenzaang

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315 Hz, 12,5 kHz ~ 63 Hz, -20 dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in **Abb. 6** gezeigten Bereich liegt.

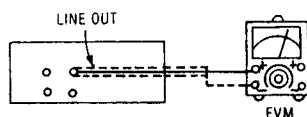


Abb. 5

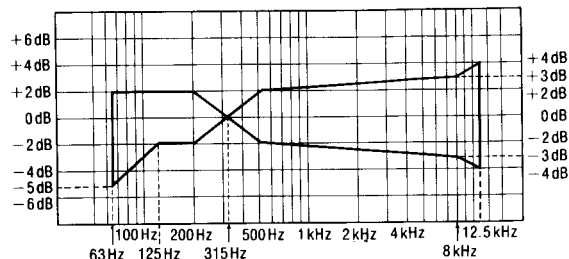


Abb. 6

## Fluoreszenzanzeigeneinstellung

1. Legen Sie das normale Leertestband (QZZCRA) ein und geben bei Aufnahme-/Pause-Betrieb ein Bezugseingabesignal (1 kHz, -24 dB) ein.
2. Verwenden Sie einen Lautstärkeregler und stellen Sie diesen so ein, daß an den "LINE OUT"-Anschlüssen des Kassettendecks 0,4 V anliegen.

### -40 dB Einstellung

3. Stellen Sie den Signaleingabepiegel aus Schritt 1 auf 40 dB und geben das Signal ins Gerät ein.
4. Justieren Sie **VR61** so, daß der "-40 dB"-Abschnitt der Anzeige schwach aufleuchtet.

### 0 dB Einstellung

5. Stellen Sie den Pegel des Eingabesignals wie in Schritt 2 oben beschrieben ein.
6. Justieren Sie **VR62** so, daß der "-0 dB"-Abschnitt der Anzeige schwach aufleuchtet.
7. Wiederholen Sie die Schritte 1 ~ 6 und achten darauf, daß der -40 dB und 0 dB Anzeigenabschnitt schwach aufleuchten.

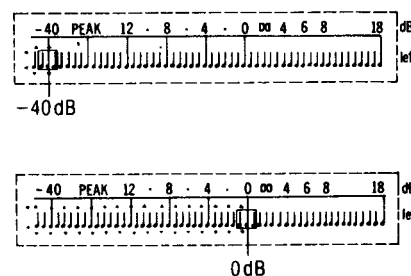


Abb. 7

## Gesamtfrequenzgang

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Geben Sie über einen Lautstärkeregler ein Bezugseingabesignal (1 kHz, -24 dB) ein.
3. Stellen Sie das Signal auf 20 dB und justieren die Frequenz von 50 Hz ~ 15 kHz.
4. Nehmen Sie das Wobbelsignal auf.
5. Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bezugsfrequenz (1 kHz) in dem in **Abb. 9** aufgezeichneten Bereich befindet.
6. Sollte das Signal nicht im Normbereich liegen, justieren Sie **VR301** (L-K) und **VR302** (R-K) so, daß der Frequenzpegel mit der Norm übereinstimmt.
  - Nach oben im Hochfrequenzbereich ausgleichen....Den vormagnetisierungsstrom anheben.
  - Nach unten im Hochfrequenzbereich ausgleichen...Den vormagnetisierungsstrom senken.
7. Wiederholen Sie die Schritte 2 ~ 6 und verwenden das CrO<sub>2</sub> Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 16 kHz (50 Hz ~ 16 kHz) angehoben.
8. Achten Sie darauf, daß sich der Frequenzpegel in dem in **Abb. 10** aufgezeigten Bereich befindet.

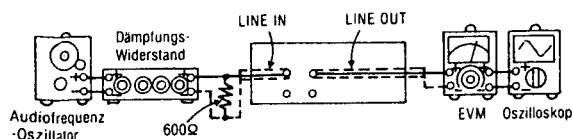


Abb. 8

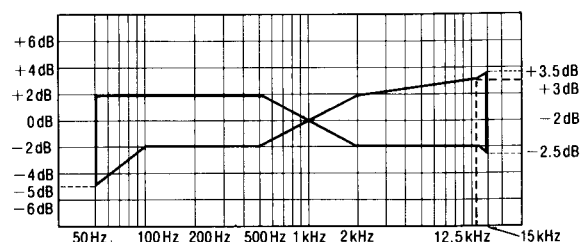


Abb. 9

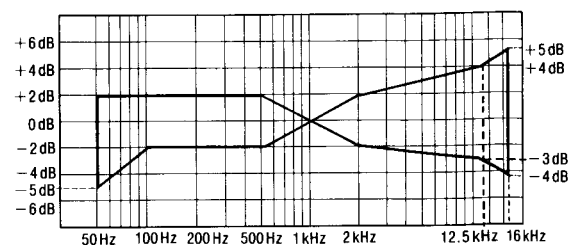


Abb. 10

### Einstellung der Gesamtverstärkungsregelung

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Betrieb.
2. Legen Sie ein Bezugseingabesignal (1 kHz, -24 dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4 V ein.
3. Nehmen Sie das Eingabesignal auf.
4. Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
5. Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie **VR151** (L-K) und **VR152** (R-K).
6. Wiederholen Sie die Schritte 2 ~ 5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

**Normwert: 0.4V ± 0.5dB**

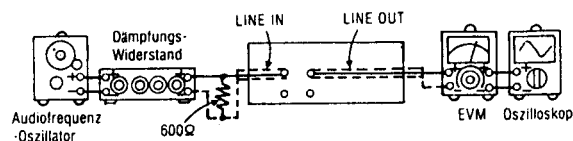


Abb. 11

### HX-PRO Einstellung

1. Legen Sie das Metalleertestband (QZZCRZ) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Schalten Sie ein Gleichspannungsvoltmeter parallel zu **R325** (L-K, 10Ω) und **R326** (R-K, 10Ω).
3. Stellen Sie **L303** (L-K) und **L304** (R-K) so ein, daß die Spannung < 110 mV Gleichspannung beträgt.

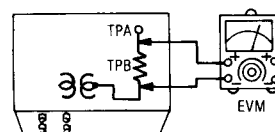


Abb. 12

TPA { TP305 (L-CH)  
TP306 (R-CH) } TPB { R325 (L-CH)  
R326 (R-CH) }

### dbx Synchronisierung

#### Kompressionsseite

1. Stellen Sie den Rauschunterdrückungswahlschalter in die dbx Stellung.
2. Legen Sie ein 1 kHz Signal an die "LINE IN"-Anschlüsse durch einen Lautstärkereger.
3. Schalten Sie ein Wechselspannungsvoltmeter parallel zu **R565** (L-K) und **R566** (R-K). Justieren Sie den Eingabesignalpegel so, daß die Spannung 20 mV beträgt.
4. Schalten Sie ein Gleichspannungsvoltmeter parallel zu **R550** (TP551) und justieren **VR551** so, daß die Spannung 15 mV beträgt.

#### Expansionsseite

5. Wiederholen Sie Schritt 1 und 2.
6. Schalten Sie ein Wechselspannungsvoltmeter parallel zu **R515** (L-K) und **R516** (R-K). Justieren Sie den Eingabesignalpegel so, daß Spannung 20 mV beträgt.
7. Schalten Sie ein Gleichspannungsvoltmeter parallel zu **R500** (TP501) und justieren **VR501** so, daß die Spannung 15 mV beträgt.

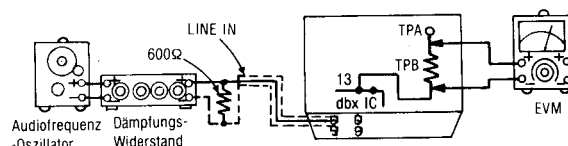


Abb. 13

TPA { TP551 (ENCODE)  
TP501 (DECODE) }

TPB { R550 (ENCODE)  
R500 (DECODE) }

### Einstellung der dbx Verstärkungsregelung

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-Betrieb.
2. Legen Sie ein 1 kHz Signal an die "LINE IN"-Anschlüsse durch einen Lautstärkereger.
3. Justieren Sie den Eingabepegel so, daß die Anzeige 0 dB anzeigt.
4. Schließen Sie ein Wechselspannungsvoltmeter an den "LINE OUT"-Anschlüsse.
5. Schalten Sie den Monitorbetriebsartschalter von "TAPE" auf "SOURCE". Justieren Sie **VR553** (L-K) und **VR553** (R-K) so, daß die Spannungsdifferenz am "LINE OUT"-Anschluß  $\approx 0.5$  dB ausmacht.

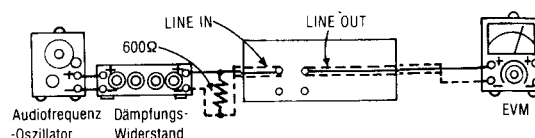


Abb. 14

# FRANÇAIS

Ceci est à utiliser conjointement avec manuel d'entretien du modèle No. RS-B905

## METHODES DES MEASURES ET REGLAGES

### Appareils de mesure

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T.(Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

### Reglage Azimutal de la tete

1. Faire jouer la portion du réglage de l'azimuth (8 kHz, -20 dB) de la bande d'essai (QZZCFM). Ajuster la vis de la mise au point azimutale jusqu'à ce que les sorties du canal de gauche et du canal de droite soient maximisées et que la forme d'onde de Lissajous, comme il est illustré, approche de 0 degré.

Nota:

Si le canal de gauche et canal de droite ne sont pas maximisés au même point, régler le point où les niveaux de chaque canal sont maximisés et égaux.

2. Effectuer le même réglage sur le mode d'audition.

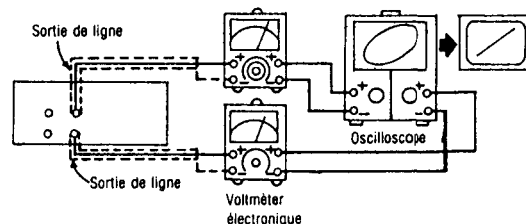


Fig. 1

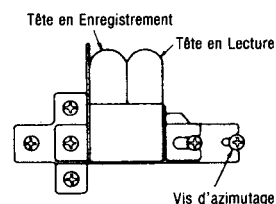


Fig. 2

### Reglage de la Vitesse de Defilement

1. Faire jouer la portion médiane de la bande d'essai (QZZCWAT).
2. Régler le régulateur de tension dans le moteur (voir Fig. 3), de telle sorte que la sortie soit en deçà de la valeur standard.

Valeur standard: 3000 ± 15, -10Hz

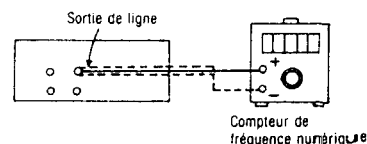


Fig. 3

### Reglage de L'amplification de Lecture

1. Faire jouer la partie réglée de l'amplification (315 Hz, 0 dB) de la bande d'essai (QZZCFM).
2. Régler VR1 (canal de gauche) et VR2 (canal de droite) de telle sorte que la sortie soit en deçà de la valeur standard.

Valeur standard: 0.4V ± 0.5dB

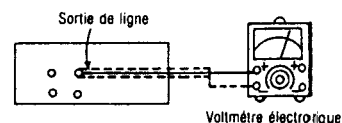


Fig. 4

### Reponse en Frequence de la Lecture

1. Faier jouer la partie de la réponse en fréquence (315 Hz, 12.5 kHz, -63 Hz, -20 dB) de la bande d'essai (QZZCFM).
2. S'assurer que la réponse en fréquence soit en deçà de la plage montrée dans la Fig. 6, à la fois pour le canal de gauche et le canal de droite.

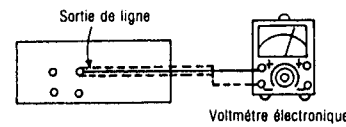


Fig. 5

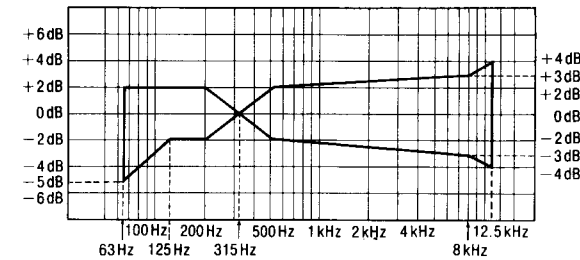


Fig. 6

### Reglage du Mesureur Fluorescent

1. Introduire la bande d'essai vierge normale (QZZCRA) et appliquer un signal d'entrée de référence (1 kHz, -24 dB) sur le mode d'intermission d'un disque.
2. En utilisant un atténuateur, le régler jusqu'à ce que la tension des bornes "LINE OUT" (sortie de ligne) des platines de magnétophones soit de 0.4 V.

#### Reglage de -40 dB

3. Diminuer le niveau du signal d'entrée de l'étape 1 de 40 dB et l'appliquer à l'appareil.
4. Régler VR61 de telle sorte que le segment de "-40 dB" soit légèrement éclairé.

#### Reglage de 0 dB

5. Régler le niveau du signal d'entrée comme il est indiqué à l'étape 2 ci-dessus.
6. Ajuster VR62 de telle sorte que le segment "0 dB" soit légèrement éclairé.
7. Répéter les étapes 1 ~ 6 ci-dessus et s'assurer que les segments à la fois de -40 dB et de 0 dB s'éclairent légèrement.

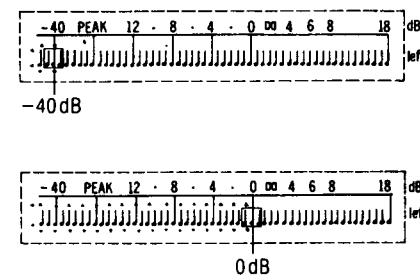


Fig. 7

### Reponse en Frequence Totale

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
2. Appliquer un signal d'entrée de référence (1 kHz, -24 dB) par l'intermédiaire d'un atténuateur.
3. Diminuer le signal de 20 dB et régler la fréquence de 50 Hz ~ 15 kHz.
4. Enregistrer le balayage de fréquence.
5. Faire jouer le signal enregistré et s'assurer qu'il soit en deçà de la plage montrée à la Fig. 9 en comparaison à la fréquence de référence (1 kHz).
6. S'il n'est pas en deçà de la plage standard, régler VR301 (canal de gauche) et VR302 (canal de droite) de telle sorte que le niveau de fréquence soit en deçà de la plage standard.
  - Elévation du niveau dans la plage de fréquence élevée..... Augmente le courant de polarisation.
  - Diminution du niveau dans la plage de fréquence élevée..... Diminue le courant de polarisation.
7. Répéter les étapes 2 ~ 6 ci-dessus en utilisant la bande CrO2 (QZZCRX) et la bande métallisée (QZZCRX) en augmentant la plage de fréquence à 16 kHz (50 Hz ~ 16 kHz).
8. S'assurer que le niveau soit en deçà de la plage montrée à la Fig. 10.

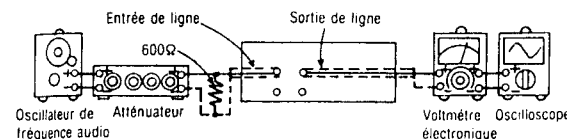


Fig. 8

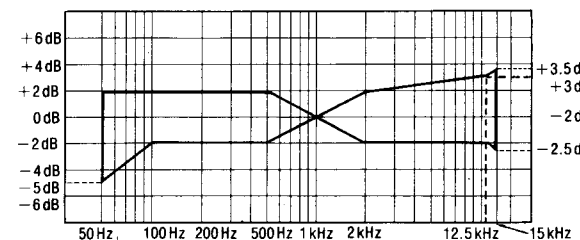


Fig. 9

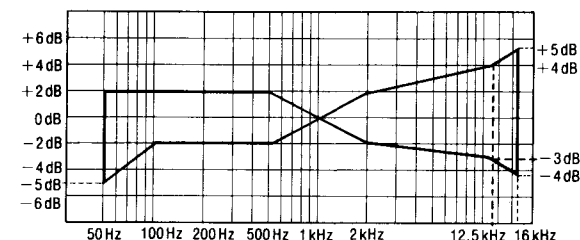


Fig. 10

### Reglage de L'amplification Totale

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'intermission d'un disque.
2. Appliquer un signal d'entrée de référence (1 kHz, -24 dB). Diminuer la sortie de telle sorte que son niveau devienne de 0.4 V.
3. Enregistrer ce signal d'entrée.
4. Faire jouer le signal enregistré à l'étape 3 ci-dessus, et s'assurer que la sortie en deçà de la valeur standard.
5. Si elle n'est pas en deçà de la valeur standard, régler VR151 (canal de gauche) et VR152 (canal de droite).
6. Répéter les étapes 2 ~ 5 ci-dessus jusqu'à ce que la sortie soit en deçà de la valeur standard.

Valeur standard: 0.4V ± 0.5dB

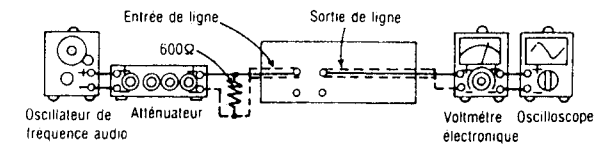


Fig. 11

### Reglage de HX-PRO

1. Introduire la bande vierge métallisée (QZZCRZ) et régler l'appareil sur le mode d'intermission d'un disque.
2. Raccorder un voltmètre à C.C. à travers R325 (canal de gauche, 10 ohms) et R326 (canal de droite, 10 ohms).
3. Régler L303 (canal de gauche) et L304 (canal de droite) de telle sorte que la tension soit inférieure à 110 mV C.C.

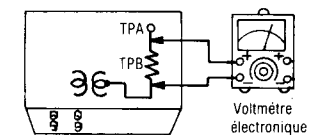


Fig. 12

TPA { TP305 (L-CH)  
TP306 (R-CH) } TPB { R325 (L-CH)  
R326 (R-CH) }

### Reglage de la Synchronisation de dbx

#### Cote du Codage

1. Régler le commutateur de réduction des bruitssur la position "dbx".
2. Appliquer un signal de 1 kHz aux bornes "LINE IN" (entrée de ligne) par l'intermédiaire d'un atténuateur.
3. Brancher un voltmètre à C.A. à travers R565 (canal de gauche) et R566 (canal de droite). Ajuster le niveau du signal d'entrée de telle sorte que la tension soit de 20 mV.
4. Brancher un voltmètre à C.C. à travers R550 (TP551) et ajuster VR551 de telle sorte que la tension soit de 15 mV.

#### Cote du Decodage

5. Répéter les étapes 1 et 2 ci-dessus.
6. Brancher un voltmètre à C.A. à travers R515 (canal de gauche) et R516 (canal de droite). Ajuster le niveau du signal d'entrée de telle sorte que la tension soit de 20 mV.
7. Brancher un voltmètre à C.C. à travers R500 (TP501) et ajuster VR501 de telle sorte que la tension devienne de 15 mV.

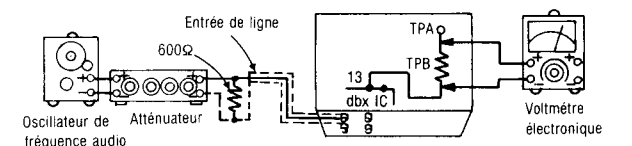


Fig. 13

TPA { TP551 (ENCODE)  
TP501 (DECODE) } TPB { R550 (ENCODE)  
R500 (DECODE) }

### Reglage de L'amplification de dbx

1. Introduire la bande d'essai vierge normale (QZZCRA) et régler l'appareil sur le mode d'enregistrement.
2. Appliquer un signal de 1 kHz à "LINE IN" (entrée de ligne) par l'intermédiaire d'un atténuateur.
3. Ajuster le niveau d'entrée de telle sorte que la lecture du mesureur soit de 0 dB.
4. Brancher un voltmètre à C.A. à la borne "LINE OUT" (sortie de ligne).
5. Commuter la position du commutateur de contrôle entre "TAPE" et "SOURCE". Ajuster VR553 (canal de gauche) et VR554 (canal de droite) de telle sorte que la différence de tension à "LINE OUT" (sortie de ligne) soit en deçà de 0.5 dB.

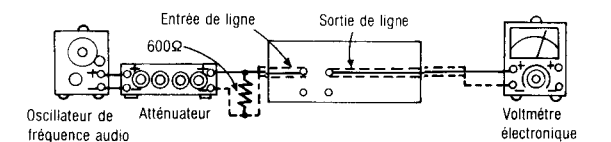


Fig. 14

## ESPAÑOL

Sírvase utilizarse junto con manual de servicio para el model No. RS-B905

### MÉTODOS DE AJUSTE Y MEDIDA

#### Instrumento de medición

- EVM(Voltímetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF
- ATT(Atenuador)
- Voltímetro CC
- Resistor(600Ω)

#### Ajuste Azimutal de Cabeza

- 1.Reproducir la porción de ajuste azimutal (8 kHz, -20 dB) de la cinta de prueba (QZZCFM). Variar el tornillo de ajuste azimutal hasta que las salidas del CH-I y CH-D se maximicen y la forma de onda de lissajous, como ilustrado, se acerque a grado 0.

Nota:

Si CH-I y CH-D no son maximizados en el mismo punto, ajustar al punto donde los niveles de cada canal sean maximizados e igualados.

- 2.Efectuar el mismo ajuste en la modalidad de reproducción.

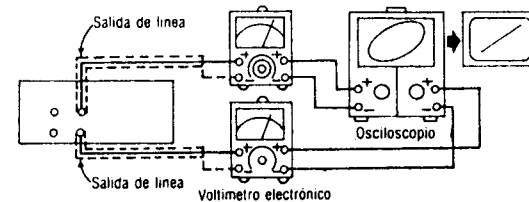


Fig. 1

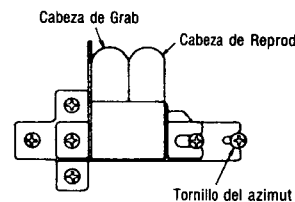


Fig. 2

#### Ajuste de Velocidad de Cinta

- 1.Reproducir la porción de la cinta prueba (QZZCWAT).
- 2.Ajustar el VR en el motor (ver la Fig. 3) de manera que salida esté dentro del valor estándar.

Valor estándar: 3000 ± 15, -10Hz

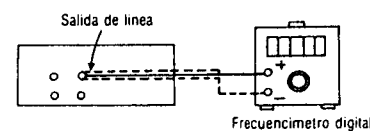


Fig. 3

#### Ajuste de Ganancia de Reproducción

- 1.Reproducir la porción ajustada de ganancia (315 Hz, 0 dB) de la cinta de prueba (QZZCFM).
- 2.Ajustar VR1 (CH-I) y VR2 (CH-D) de manera que la salida esté dentro del valor estándar.

Valor estándar: 0.4V ± 0.5dB

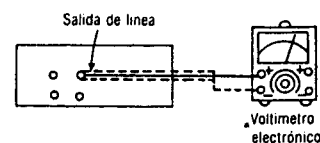


Fig. 4

#### Respuesta de Frecuencia de Reproducción

- 1.Reproducir la parte de respuesta de frecuencia de reproducción (315 Hz, 12.5 kHz ~ 63 Hz, -20 dB) de la cinta de prueba (QZZCFM).
- 2.Asegurarse de que la respuesta de frecuencia esté dentro de la gama mostrada en la Fig. 6 para ambos CH-I y CH-D.

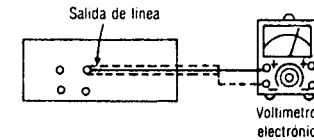


Fig. 5

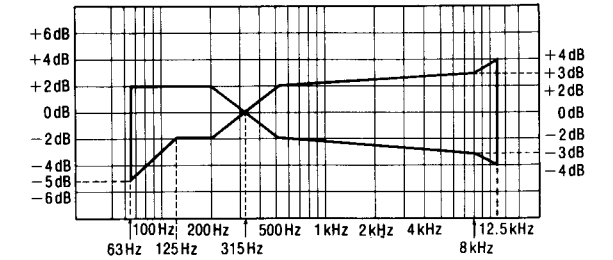


Fig. 6

#### Ajuste de Medidor de Fluorescente

- 1.Insertar la cinta de prueba en blanco normal (QZZCRA) y aplicar una señal de entrada de referencia (1 kHz, -24 dB) en la modalidad de Pausa de Grabación.
- 2.Utilizando un atenuador, ajustarlo hasta que la tensión de los terminales "LINE OUT" (salida de línea) de las platinas de cinta sea 0.4 V

#### Ajuste de -40 dB

- 3.Atenuar el nivel de entrada de señal en paso 1, por 40 dB y aplicarlo a la unidad.
- 4.Ajustar VR61 de manera que el segmento "-40 dB" esté ligeramente iluminado.

#### Ajuste de 0 dB

- 5.Poner el nivel de señal de entrada como indicado en el paso 2 de arriba.
- 6.Ajustar VR62 de manera que el segmento "0 dB" esté ligeramente iluminado.
- 7.Repetir los pasos 1 ~ 6 de arriba y asegurarse de que ambos segmentos, -40 dB y 0 dB, se iluminen ligeramente.

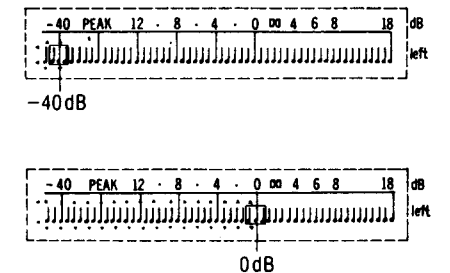


Fig. 7

#### Respuesta de Frecuencia Total

- 1.Poner una cinta virgen normal (QZZCRA) y poner la unidad en la modalidad de Pausa de Grabación.
- 2.Aplicar la señal de entrada de referencia (1 kHz, -24 dB) a través de un atenuador.
- 3.Atenuar la señal por 20 dB y ajustar la frecuencia de 50 Hz ~ 15 kHz.
- 4.Grabar el barrido de frecuencia.
- 5.Reproducir la señal grabada y asegurarse de que esté dentro de la gama mostrada en la Fig. 9 en comparación con la frecuencia de referencia (1 kHz).
- 6.Si no está dentro de la gama de frecuencia, ajustar VR301 (CH-I) y VR302 (CH-D) de manera que el nivel de frecuencia esté dentro de la gama estándar.
  - Subir el nivel en la gama de frecuencia alta..... Incrementar la corriente de polarización.
  - Bajar el nivel en la gama de frecuencia baja..... Disminuir la corriente de polarización.
- 7.Repetir los pasos 2 ~ 6 de arriba utilizando la cinta Cro2 (QZZCRX) y la cinta metálica (QZZCRZ) incrementando la gama de frecuencia a 16 kHz (50 Hz ~ 16 kHz).
- 8.Asegurarse de que el nivel esté dentro de la gama mostrada en la Fig. 10.

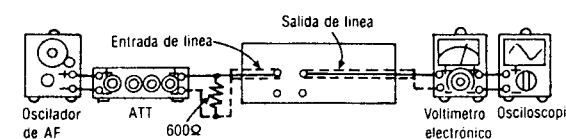


Fig. 8

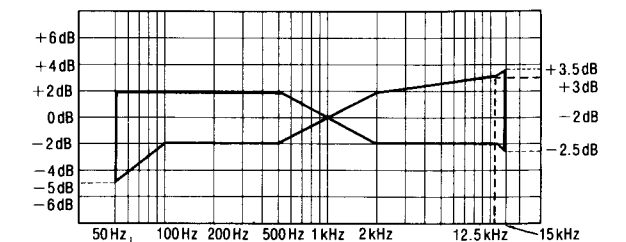


Fig. 9

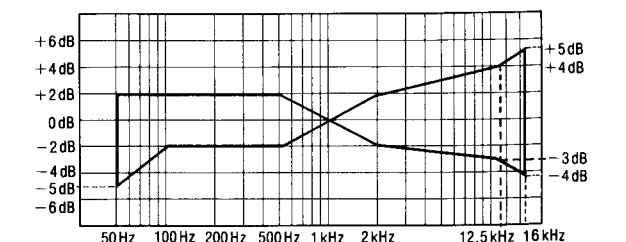


Fig. 10

### Ajuste de Ganancia Total

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y poner la unidad en modalidad de pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1 kHz, -24 dB). Atenuar la salida de manera que su nivel se haga 0.4 V.
3. Grabar la señal de entrada.
4. Reproducir la señal grabada en el paso 3 de arriba y asegurarse de que la salida esté dentro del valor estándar.
5. Si no está dentro del valor estándar, ajustar **VR151** (CH-I) y **VR152** (CH-D).
6. Repetir el paso 2 ~ 5 de arriba hasta que la salida esté dentro del valor estándar.

**Valor estándar:  $0.4V \pm 0.5dB$**

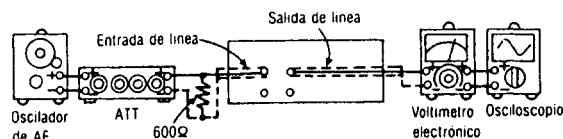


**Fig. 11**

### Ajuste de HX-PRO

1. Insertar la cinta en blanco metálica (QZZCRZ) y poner la unidad en la modalidad de pausa de Grabación.
2. Conectar un voltímetro CC a través de **R325** (CH-I, 10 ohmios) y **R326** (CH-D, 10 ohmios).
3. Ajustar **L303** (CH-I) y **L304** (CH-D) de manera que la tensión se haga menos de 110 mV CC.

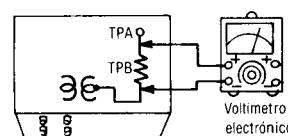


**Fig. 12**

TPA { TP305 (L-CH)  
TP306 (R-CH) } TPB { R325 (L-CH)  
R326 (R-CH) }

### Ajuste de Sincronización de dbx

#### Lado de Codificar

1. Poner el interruptor de reducción de ruido en la posición dbx.
2. Aplicar una señal de 1 kHz a los terminales "LINE IN" (entrada de línea) a través de un atenuador.
3. Conectar un voltímetro CC a través de **R565** (CH-I) y **R566** (CH-D). Ajustar el nivel de señal de entrada de manera que la tensión se haga 20 mV.
4. Conectar un voltímetro CC a través de **R550** (TP551) y ajustar **VR551** de manera que la tensión se haga 15 mV.

#### Lado de Descodificador

5. Repetir los pasos 1 y 2 de arriba.
6. Conectar un voltímetro CC a través de **R515** (CH-I) y **R516** (CH-D). Ajustar el nivel de señal de entrada de manera que la tensión sea 20 mV.
7. Conectar un voltímetro CC a través de **R500** (TP501) y ajustar **VR501** de manera que la tensión se haga 15 mV.

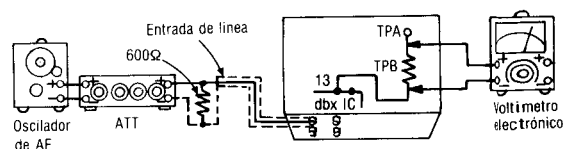


**Fig. 13**

TPA { TP551 (ENCODE)  
TP501 (DECODE) }

TPB { R550 (ENCODE)  
R500 (DECODE) }

### Ajuste de Ganancia de dbx

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y poner la unidad en la modalidad de Grabación.
2. Aplicar una señal de 1 kHz a la "LINE IN" (entrada de línea) a través de un atenuador.
3. Ajustar el nivel de entrada de que la lectura del medidor sea 0 dB.
4. Conectar un voltímetro CC al terminal de "LINE OUT".
5. Conmutar la posición del interruptor de monitor entre "TAPE" (cinta) y "SOURCE" (fuente). Ajustar **VR553** (CH-I) y **VR554** (CH-D) de manera que la diferencia de tensión en "LINE OUT" esté dentro de 0.5 dB.

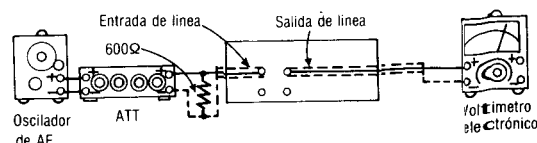


**Fig. 14**

# Service Manual

Cassette Deck

**RS-B905**

Color

(K)... Black Type

**Supplement****\*\*  
dbx/Closed Loop Dual Capstan  
DOUBLE DOLBY SYSTEM****\*  
DOLBY B-C NR HX PRO**

\* HX Pro headroom extension originated by Bang Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

\*\* The term dbx is a registered trademark of dbx Inc.

Please file and use this supplement manual together with the service manual for model No. RS-B905, Order No. HAD8705124C0 and HAD8707218S0.

| Color | Areas                                                               |
|-------|---------------------------------------------------------------------|
| (K)   | [M] ..... U.S.A.                                                    |
| (K)   | [MC]... Canada.                                                     |
| (K)   | [E] ..... All European areas except United Kingdom.                 |
| (K)   | [EK].... United Kingdom.                                            |
| (K)   | [EG] ... F.R. Germany.                                              |
| (K)   | [EH] ... Holland.                                                   |
| (K)   | [XA].... Asia, Latin America, Middle Near East, Africa and Oceania. |
| (K)   | [XL].... Australia.                                                 |
| (K)   | [XB].... Saudi Arabia.                                              |

**Notes:**

- This supplement has been issued to inform you that the Erase Head has been changed in units having serial number suffixes "B" or later. (Refer to "How to read the serial number" on page 2.).
- The head was changed to improve the High-Pass Demagnetization.

## CHANGES

## REPLACEMENT PARTS LIST

**Note:** Part numbers are indicated on most mechanical parts. Please use this part number for parts order.

| Ref. No. | Change of Parts No. |       | Description                                                     | Schematic Diagram Zone |
|----------|---------------------|-------|-----------------------------------------------------------------|------------------------|
|          | OLD                 | ➡ NEW |                                                                 |                        |
| RESISTOR |                     |       |                                                                 |                        |
| R308     | ERD25FJ561          | ..... | Deletion, Carbon, 560Ω, 1/4 W<br>[M, MC]                        | E-3                    |
|          | ERG1SJ561           |       | Deletion, Metal Oxide, 560Ω, 1 W<br>[E, EK, EG, EH, XA, XL, XB] |                        |

# Technics

**Matsushita Services Company**  
50 Meadowland Parkway,  
Secaucus, New Jersey 07094

**Panasonic Sales Company,**  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
Ave. 65 De Infanteria, Km. 9.7  
Victoria Industrial Park  
Carolina, Puerto Rico 00630

**Panasonic Hawaii, Inc.**  
91-238, Kauhū St. Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

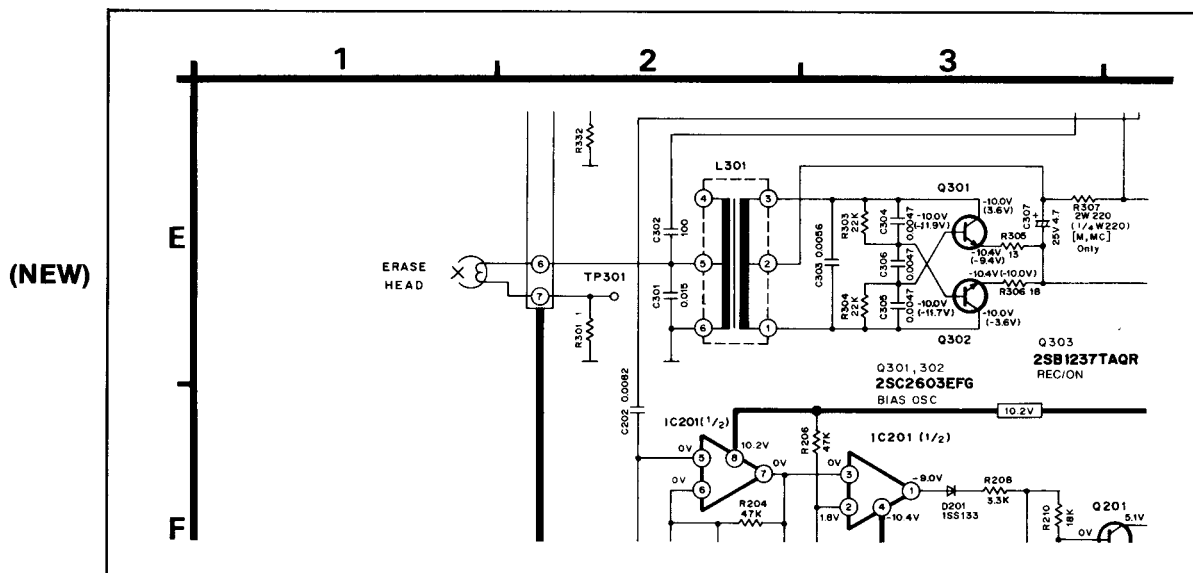
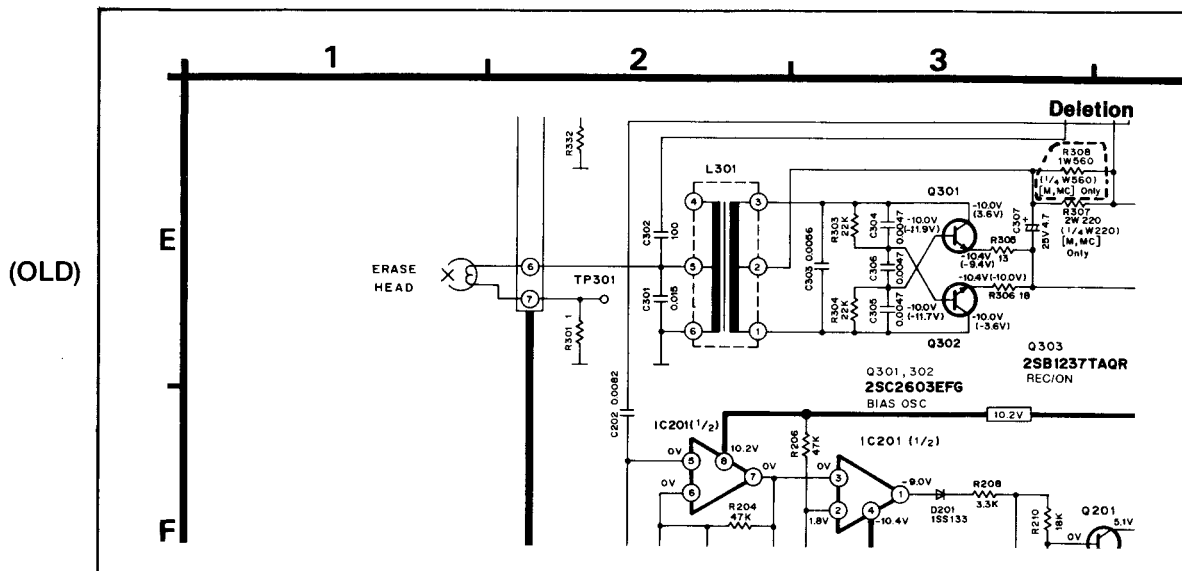
**Matsushita Electric  
of Canada Limited**  
5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3

**Matsushita Electric Trading Co., Ltd.**  
P.O. Box 288, Central Osaka Japan

| Ref. No.       | Change of Parts No. |            | Description | Remarks |
|----------------|---------------------|------------|-------------|---------|
|                | OLD                 | NEW        |             |         |
| MECHANISM PART |                     |            |             |         |
| 105            | SMQA1192            | SMQA1192-1 | Erase Head  | change  |

## ■ SCHEMATIC DIAGRAM

**Note:** R308 has deleted to improve the efficiency of the High-pass Demagnetization.



# Service Manual

Cassette Deck

**RS-B905**

Color

(K)... Black Type

**Supplement****\*\*  
dbx/Closed Loop Dual Capstan  
DOUBLE DOLBY SYSTEM****\*  
DOLBY B·C NR HX PRO**

\* HX Pro headroom extension originated by Bang Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

\*\* The term dbx is a registered trademark of dbx Inc.

**Please file and use this supplement manual together with the service manual for model No. RS-B905, Order No. HAD8705124C0.**

| Color | Areas                                                               |
|-------|---------------------------------------------------------------------|
| (K)   | [M] ..... U.S.A.                                                    |
| (K)   | [MC]... Canada.                                                     |
| (K)   | [E] ..... All European areas except United Kingdom.                 |
| (K)   | [EK].... United Kingdom.                                            |
| (K)   | [EG] ... F.R. Germany.                                              |
| (K)   | [EH] ... Holland.                                                   |
| (K)   | [XA].... Asia, Latin America, Middle Near East, Africa and Oceania. |
| (K)   | [XL].... Australia.                                                 |
| (K)   | [XB].... Saudi Arabia.                                              |

**Notes:**

- The circuit of RS-B905 has been changed for the improvement of performance.

## CHANGES

## REPLACEMENT PARTS LIST

**Notes:** • Part numbers are indicated on most electrical parts. Please use this part number for parts order.

• Important safety notice:

Components identified by the  $\Delta$  mark have special characteristics important for safety.

When replacing any of these components, use only manufacturer's specified parts.

| Ref. No.  | Change of Parts No. |            | Part Name & Description  | Per Set<br>(Pcs.) | Remarks |
|-----------|---------------------|------------|--------------------------|-------------------|---------|
|           | OLD                 | NEW        |                          |                   |         |
| RESISTORS |                     |            |                          |                   |         |
| R5, 6     | ERDS2TJ684          | ERDS2TJ474 | Carbon, 1/4W, 470kΩ, ±5% | 2                 |         |
| R7, 8     | ERDS2TJ183          | ERDS2TJ113 | Carbon, 1/4W, 11kΩ, ±5%  | 2                 |         |
| R9, 10    | ERDS2TJ103          | ERDS2TJ752 | Carbon, 1/4W, 7.5kΩ, ±5% | 2                 |         |
| R163, 164 | ERDS2TJ121          | ERDS2TJ181 | Carbon, 1/4W, 180Ω, ±5%  | 2                 |         |
| R165, 166 | ERDS2TJ331          | ERDS2TJ181 | Carbon, 1/4W, 180Ω, ±5%  | 2                 |         |
| R171, 172 | ERDS2TJ471          | ERDS2TJ102 | Carbon, 1/4W, 1kΩ, ±5%   | 2                 |         |
| R175, 176 | ERDS2TJ102          | ERDS2TJ561 | Carbon, 1/4W, 560Ω, ±5%  | 2                 |         |
| R185, 186 | ERDS2TJ682          | ERDS2TJ103 | Carbon, 1/4W, 10kΩ, ±5%  | 2                 |         |
| R457, 458 | ERDS2TJ123          | ERDS2TJ682 | Carbon, 1/4W, 6.8kΩ, ±5% | 2                 |         |
| R503, 504 | ERDS2TJ274          | ERDS2TJ472 | Carbon, 1/4W, 4.7kΩ, ±5% | 2                 |         |

Matsushita Services Company  
50 Meadowland Parkway,  
Secaucus, New Jersey 07094

Panasonic Hawaii, Inc.  
91-238, Kauh St. Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka Japan

Panasonic Sales Company,  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
Ave. 65 De Infanteria, KM 9.7  
Victoria Industrial Park  
Carolina, Puerto Rico 00630

Matsushita Electric  
of Canada Limited  
5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3

# Technics

| Ref. No.    | Change of Parts No. |             | Part Name & Description                       | Per Set<br>(Pcs.) | Remarks     |
|-------------|---------------------|-------------|-----------------------------------------------|-------------------|-------------|
|             | OLD                 | NEW         |                                               |                   |             |
| CAPACITORS  |                     |             |                                               |                   |             |
| C9, 10      | ECQM1H472JZ         | ECQM1H682JZ | Polyester, 50V, 0.0068μF, ±5%                 | 2                 |             |
| C165, 166   | ECQM1H183JV         | ECQM1H223JZ | Polyester, 50V, 0.022μF, ±5%                  | 2                 |             |
| C505, 506   | ECQM1H183JZ         | ECQM1H472JZ | Polyester, 50V, 0.0047μF, ±5%                 | 2                 |             |
| C610        | ECKD1H223PF         | _____       | _____ [EK] only                               | 1                 | Deletion    |
| C610        | _____               | ECKD1H223PF | Ceramic, 50V, 0.022μF, ±100%<br>[EG, XL] only | 1                 | Addition, Δ |
| TRANSISTORS |                     |             |                                               |                   |             |
| Q901        | 2SD1225RM           | 2SD1858TAQR | Transistor                                    | 1                 |             |
| Q914        | 2SD1225RM           | 2SD1858TAQR | Transistor [M, MC] only                       | 1                 |             |
| Q916        | 2SD1225RM           | 2SD1858TAQR | Transistor [M, MC] only                       | 1                 |             |